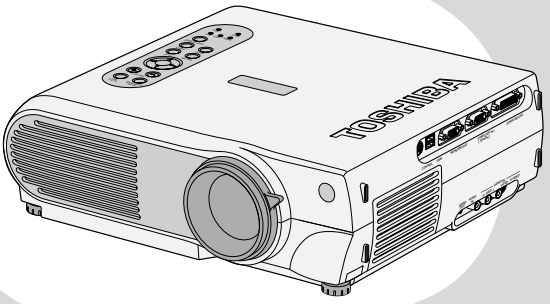
TOSHIBA

FILE NO. 330-200008

SERVICE MANUAL

3LCD DATA PROJECTOR

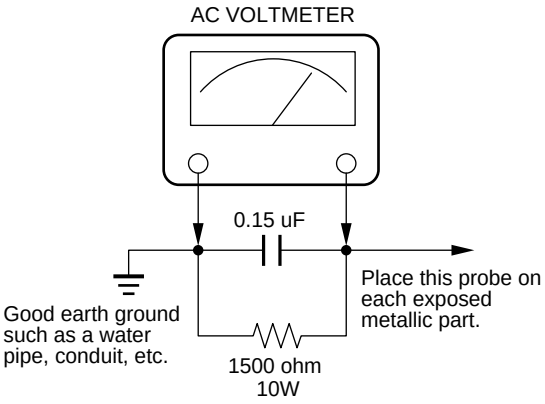
TLP-X10U/11U/20U/21U
TLP-X10E/11E/20E/21E
TLP-X10Y/11Y/20Y/21Y
TLP-X20C/21C
TXP-X20/21



SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary precautions on this projector. The following are the necessary precautions to be observed before servicing this chassis.

1. An isolation Transformer should be connected in the power line between the projector and the AC line before any service is performed on the projector.
2. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as; non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
3. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as terminals, screwheads, metal overlays, control shafts etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohm per volt or more sensitivity in the following manner: Connect a1500 ohm 10W resistor, paralleled by a 0.15 uF, AC type capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combina-tion of 1500 ohm resistor and 0.15 uF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage mea-surements for each exposed metallic part. Voltage mea-sured must not exceed 5.25V(rms). This corresponds to 3.5 mA(AC). Any value exceeding this limit consti-tutes a potential shock hazard and must be corrected immediately.


AC VOLTMETER
0.15 uF
Place this probe on each exposed metallic part.
Good earth ground such as a water pipe, conduit, etc.
1500 ohm 10W

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These charac-teristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot neces-sarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

ULTRAVIOLET DANGER IN SERVICE MODE

Eye damage may result from directly viewing the light produced by the lamp used in this product. Always turn off lamp before opening this cover. Ultraviolet radiation eye protection required during servicing.

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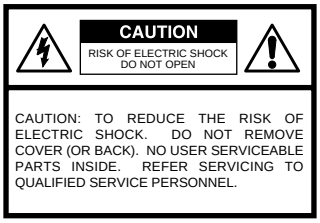
SAFETY PRECAUTIONS


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDETHE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIRED PERSONNEL ONLY.

CAUTION: Laser beam is emitted when the laser button of the remote control is pressed. Do not look from the front of the remote control. Do not face toward a person or to a mirror.

FCC Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiates radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this equipment, not expressly approved by Toshiba, or parties authorized by Toshiba, could void the user's authority to operate the equipment.

Notice: This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada.

IMPORTANT PRECAUTIONS

Save Original Packing Materials

The original shipping carton and packing materials will come in handy if you ever have to ship your LCD projector. For maximum protection, repack the set as it was originally packed at the factory.

Avoid Volatile Liquid

Do not use volatile liquids, such as an insect spray, near the unit.
Do not leave rubber or plastic products touching the unit for a long time. They will mar the finish.

Moisture Condensation

Never operate this unit immediately after moving it from a cold location to a warm location. When the unit is exposed to such a change in temperature, moisture may condense on the crucial internal parts. To prevent the unit from possible damage, do not use the unit for at least 2 hours when there is an extreme or sudden change in temperature.

In the spaces provided below, record the Model and Serial No. Iocated at the bottom of your LCD projector.

Mode No. _____ Serial No. _____

Retain this information for future reference.

IMPORTANT SAFETY INSTRUCTIONS

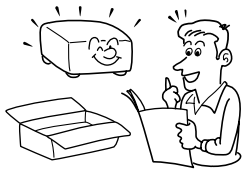
CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN OWNER'S MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS BOOKLET FOR FUTURE REFERENCE.

This set has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.

DO NOT REMOVE THE CABINET COVER, OR YOU MAY BE EXPOSED TO DANGEROUS VOLTAGE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. Read Owner's Manual

After unpacking this product, read the owner fs manual carefully, and follow all the operating and other instructions.

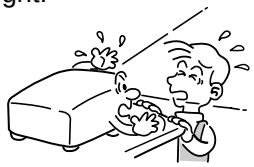


2. Power Sources

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

3. Source of Light

Do not look into the lens while the lamp is on. The strong light from the lamp may cause damage to your eyes or sight.



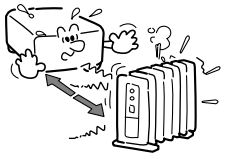
4. Ventilation

Openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered.

The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer fs instructions have been adhered to.

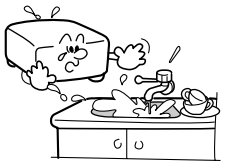
5. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.



6. Water and Moisture

Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool and the like.



IMPORTANT SAFETY INSTRUCTIONS (continued)

7. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

8. Power-Cord Protection

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

9. Overloading

Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

10. Lightning

For added protection for this product during storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet.

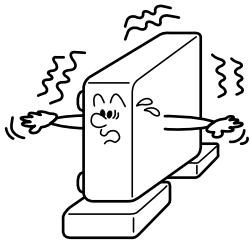
This will prevent damage to the product due to lightning and power-line surges.

11. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

12. Do not place the product vertically

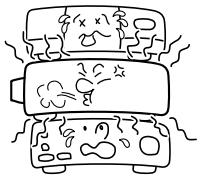
Do not use the product in the upright position to project the pictures at the ceiling, or any other vertical positions. It may fall down and dangerous.



13. Stack Inhibited

Do not stack other equipment on this product or do not place this product on the other equipment.

Top and bottom plates of this product develops heat and may give some undesirable damage to other unit.



14. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

15. Accessories

Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product.

Any mounting of the product should follow the manufacturer fs instructions, and should use a mounting accessory recommended by the manufacturer. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

16. If glass components, including lens and lamp, should break, contact your dealer for repair service.

This product incorporates glass components, including a lens and a lamp. If such parts should break, please handle with care to avoid injury and contact your dealer for repair service. The broken pieces of glass may cause to injury. In the unlikely event of the lamp rupturing, thoroughly clean the area around the projector and discard

17. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a) When the power-supply cord or plug is damaged.

b) If liquid has been spilled, or objects have fallen into the product.

c) If the product has been exposed to rain or water.

d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.

e) If the product has been dropped or damaged in any way.

f) When the product exhibits a distinct change in performance – this indicates a need for service.

18. Servicing

Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. (Replacement of the lamp only should be made by users.)

20. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

21. Do not get your hands between the camera arm and the main unit when setting the camera arm back in its original position.

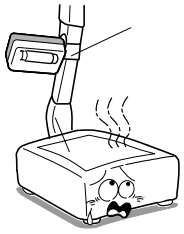
To avoid injury, be careful not to get your hands caught when setting the camera arm back in its original position. Families with children should be particularly careful.

22. Do not carry by the camera arm.

Do not carry the projector by the camera arm. Doing so can result in damage or injury.

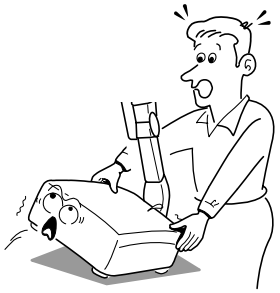
23. Do not leave documents on the unit for long periods of time while using the document imaging function.

Do not leave texts, papers or other documents for projection on the unit for long periods of time. The heat could erase the letters on a thermal paper.



24. Do not move the projector while the arm is still erect.

Always store the arm back in position when moving the projector. Otherwise injury or damage may result.

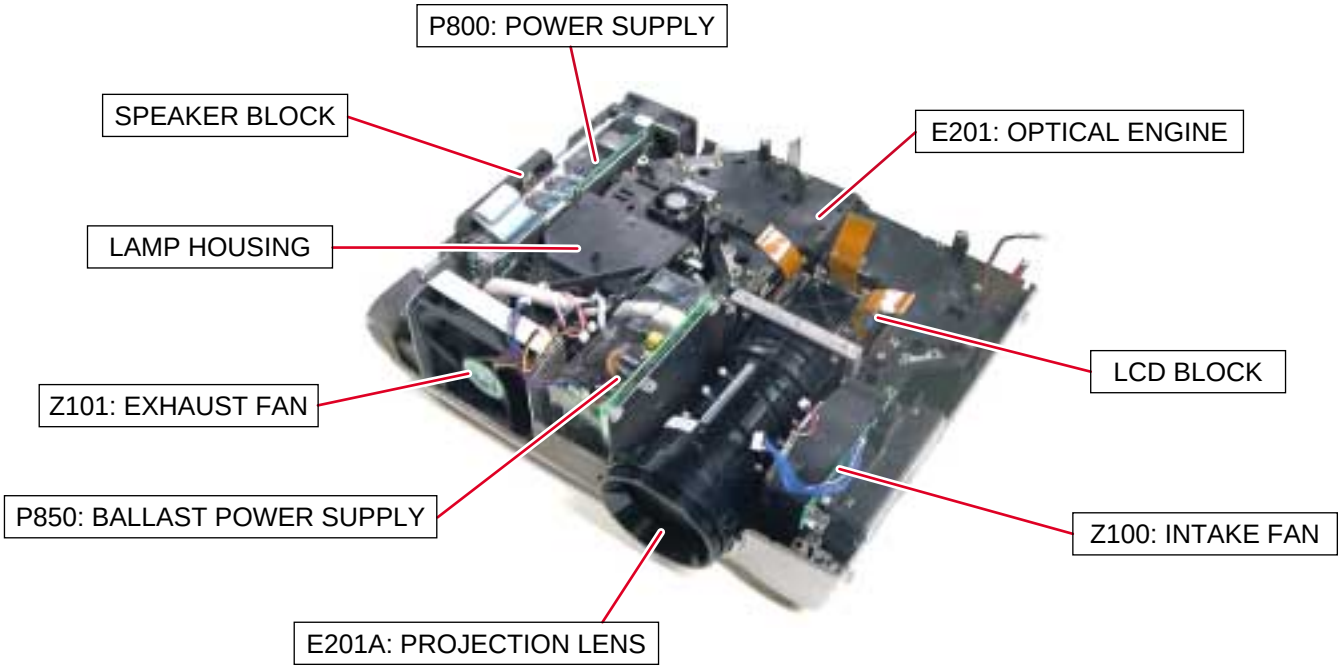


25. Do not look into the arm light while it is lit.

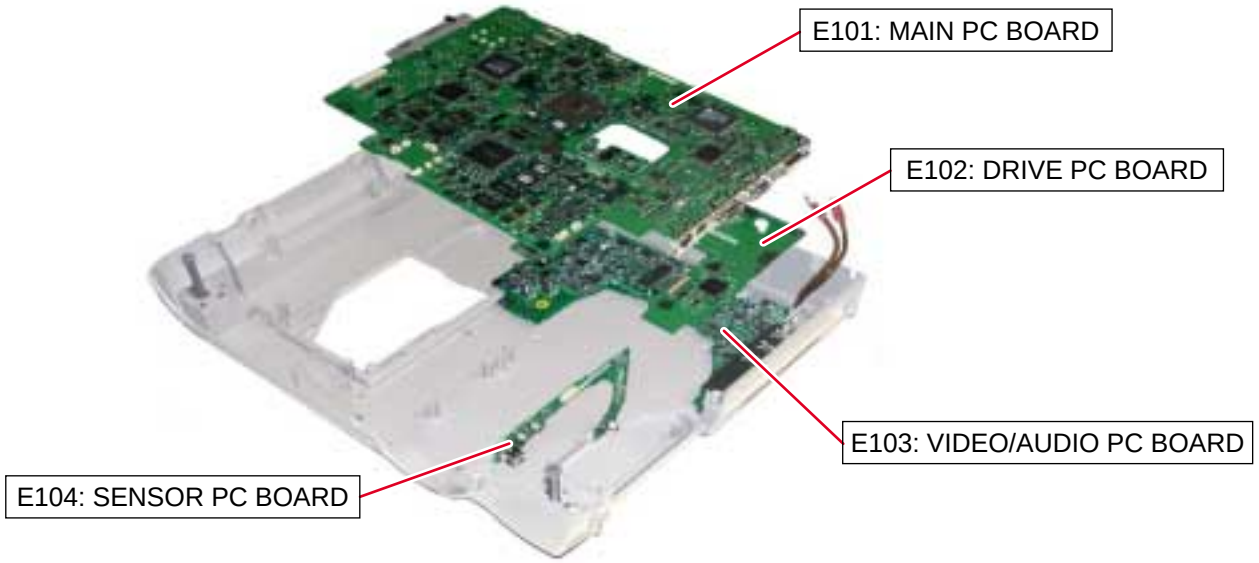
The strong light may cause damage to your eyes or sight.

SECTION 1
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

1. LOCATION OF MAIN PARTS



2. LOCATION OF PC BOARD

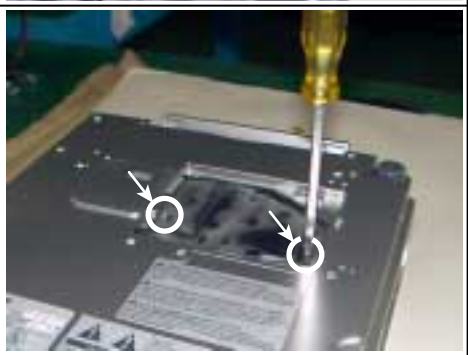


CAUTIONS BEFORE SERVICING

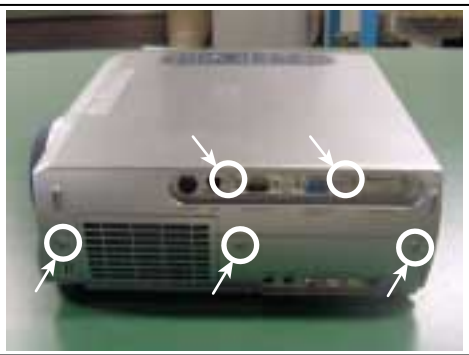
Electronic parts are susceptible to static electricity and may easily be damaged, so do not forget to take proper grounding treatment as required.
Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

3. REPLACEMENT OF MECHANICAL PARTS

3-1. Lamp Assembly

Step	Figure	Explanation
1		Loosen 2 screws (M3 x 8). These screws are retained with split washers.
2		Remove the lamp cover.
3		Loosen 2 screws that secure the lamp module (M3 x 8). These screws are retained with split washers.
4		Lift the lamp module and slide out from the projector.

3-2. Top Cover

Step	Figure	Explanation
1		**[Left Side]** Remove 3 screws (M3 x 6). Screw : type [M-1]
2		**[Right Side]** Remove 5 screws (M3 x 6). Screw : type [M-1]
3		**[Front]** Remove 3 screws (2 x 5). Screw : type [M-2]
4		Remove front cover. [Note] Unsnap the bottom first, and then unsnap the top.
5		**[Front]** Remove 1 screw (M3 x 6). Screw : type [M-1]

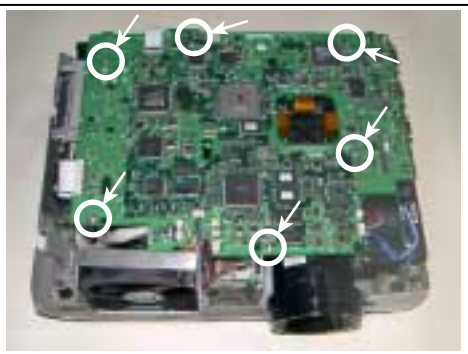
3-2. Top Cover (Continued)

Step	Figure	Explanation
6		**[Rear]** Remove 3 screws (M2 x 5). Screw : type [M-2]
7		Remove rear cover. [Note] Unsnap the bottom first, and then unsnap the top.
8		**[Rear]** Remove 1 screw (M3 x 6). Screw : type [M-1]
9		**[Top]** Remove the small piece (One side is lifted and removed).
10		**[Top]** Remove 1 screw (M3 x 6). Screw : type [M-1]

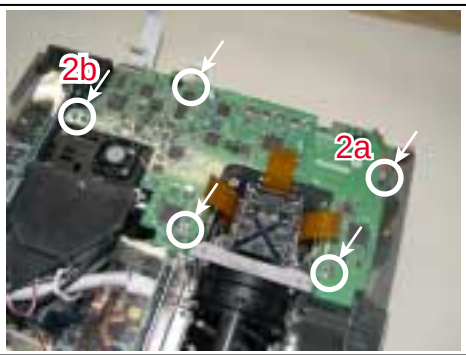
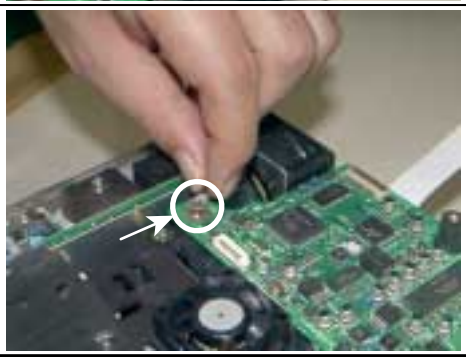
3-2. Top Cover (Continued)

Step	Figure	Explanation
11		Top cover can be removed by lifting left edge.

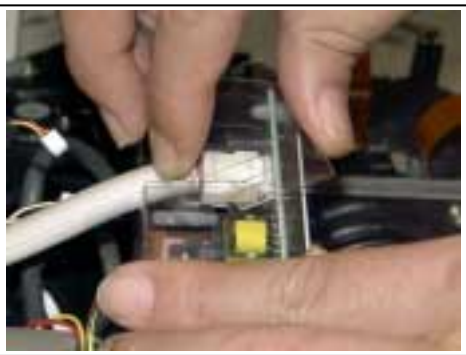
3-3. Main PC Board

Step	Figure	Explanation
1		Remove all cables and connectors.
2		Remove 6 screws (M3 x 6). Screw : type [M-1]
3		Remove 1 screws (M3 x 6). Screw : type [M-1] [Note] The screw here is also fixing the grand wire.

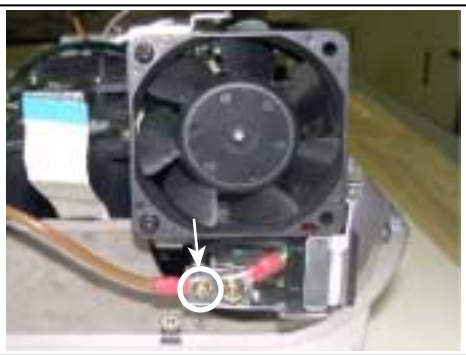
3-4. Drive PC Board

Step	Figure	Explanation
1		Remove all cables and connectors.
2		Remove 5 screws (M3 x 6). Screw : type [M-1]
2a		[Note] The screw here is also fixing the grand wire.
2b		[Note] The screw here is also fixing the grand wire.

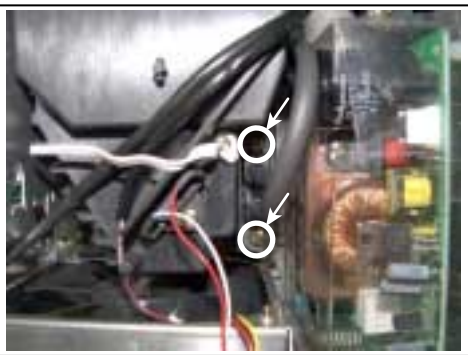
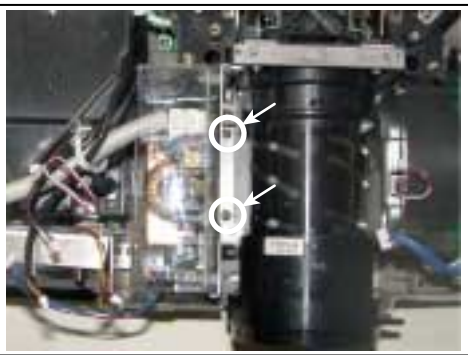
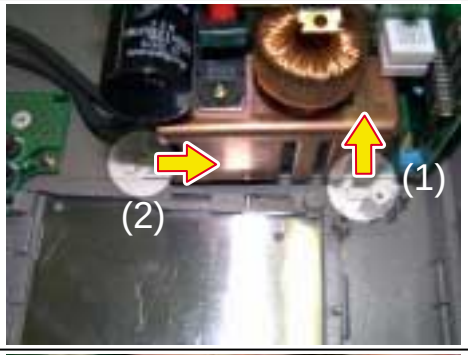
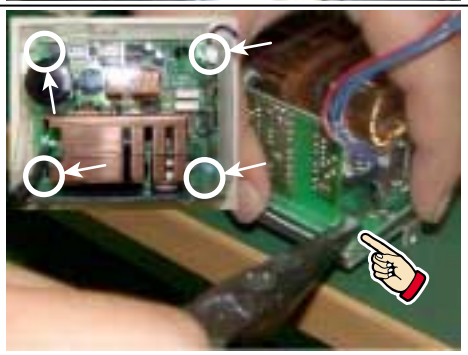
3-5. Power Supply

Step	Figure	Explanation
1		Disconnect the cable from the ballast power supply. (Plastic case is opened)
2		Remove 1 screw (M3 x 8). Screw : type [M-1]
3		Remove 1 screw (M3 x 8). Screw : type [M-1]
4		Remove 1 hook from the bottom cabinet in the direction of this arrow.
5		Remove 1 hook from the bottom cabinet in the direction of this arrow.

3-5. Power Supply (Continued)

Step	Figure	Explanation
6		Remove 1 screw (M3 x 6SW). Screw : type [E-2]

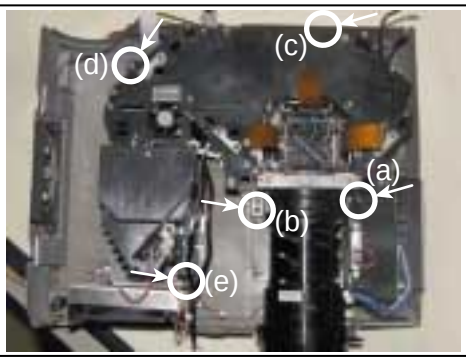
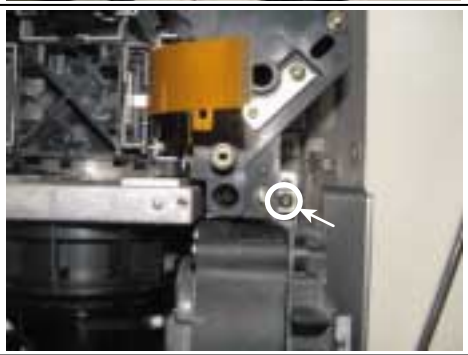
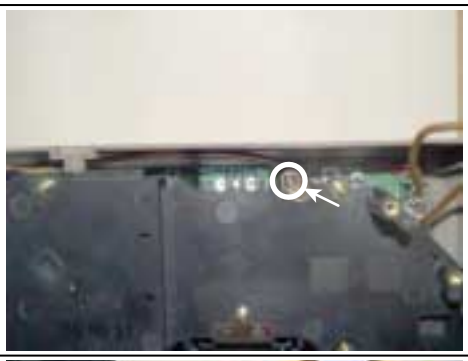
3-6. Ballast power Supply

Step	Figure	Explanation
1		Remove 2 screws (3 x 8), then, disconnect the lamp cable connector. Screw : type [M-3]
2		Remove 2 screws (3 x 8). Screw : type [M-3]
3		Remove 1 screw (M3 x 6). Screw : type [M-1]
4		Remove 2 hooks from the bottom cabinet in the direction of this arrow. (It removes in the order of (1) → (2).)
5		Release 4 P.C. board holder by using tweezers.

3-6. Ballast power Supply (Continued)

Step	Figure	Explanation
6		Remove the ballast power from the aluminum plate and plastic case.

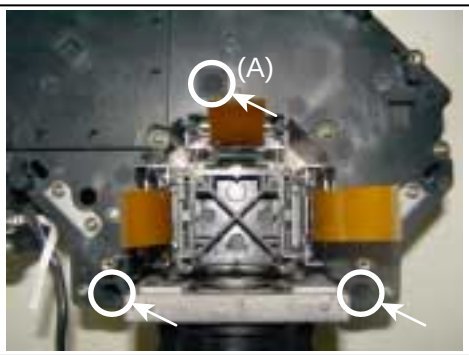
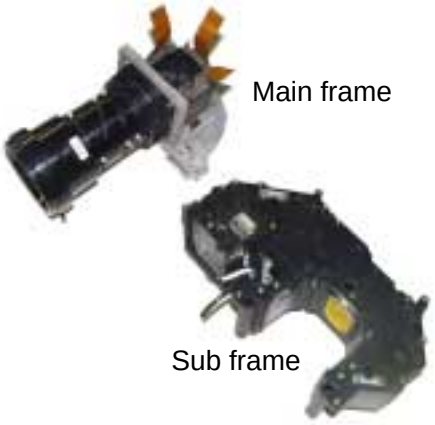
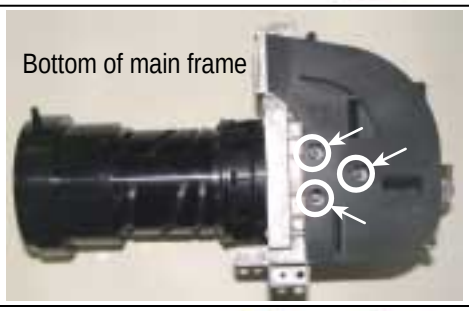
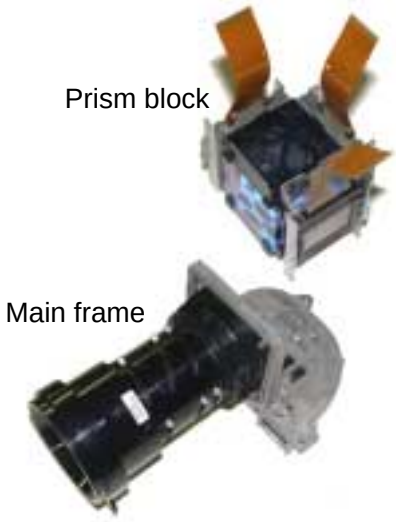
3-7. Optical Engine

Step	Figure	Explanation
1		Remove 4 screws (3 x 12). .....(a)-(d) Screw : type [M-4] Remove 1 screw (3 x 8). .....(e) Screw : type [M-3]
1a		Enlargement (a)
1b		Enlargement (b)
1c		Enlargement (c)
1d		Enlargement (d)

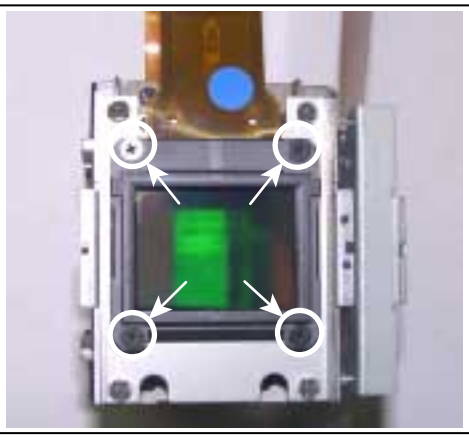
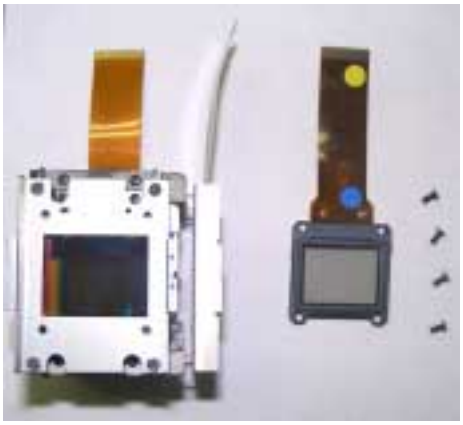
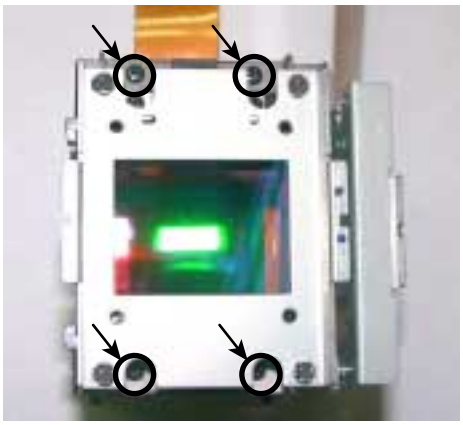
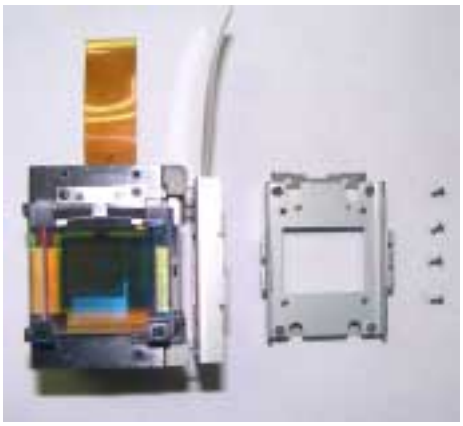
3-7. Optical Engine (Continued)

Step	Figure	Explanation
1e		Enlargement (e) [Note] This screw is different from others.
2		Whole engine appearance view.
3		Remove 1 screw and remove the lamp house (M3 x 6). Screw : type [M-1]
4		Remove 1 screw and remove the thermal breaker (3 x 8). Screw : type [M-3]
5		Remove 1 screw and remove the PBS cooling fan (M2.5 x 14SW). Screw : type [E-9]

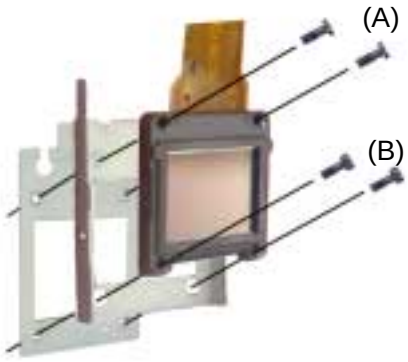
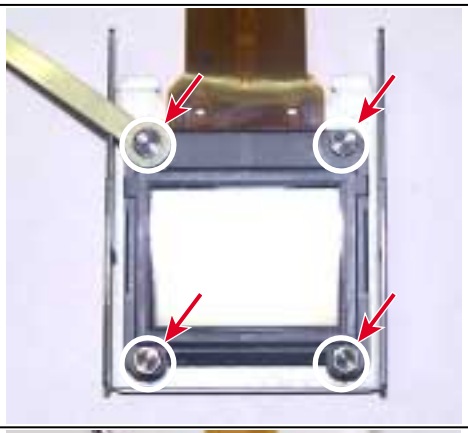
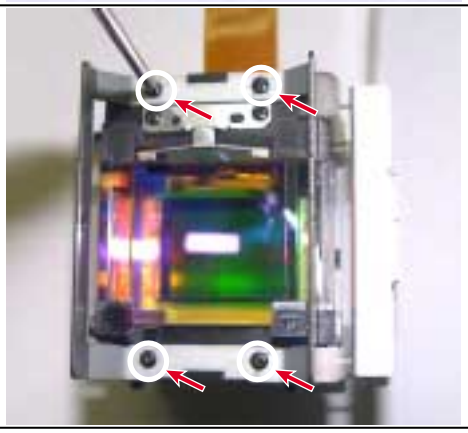
3-8. LCD Panel

Step	Figure	Explanation
1		Remove 3 screws (M3 x 8SW) . Screw : type [E-1] [Note] Tear off adhesive tape when you remove the screw of (A).
2		Separate the main frame and sub frame from the engine block.
3		Remove 3 screws (M3 x 12SW). Screw : type [E-10]
4		Separate the prism block from the main frame.

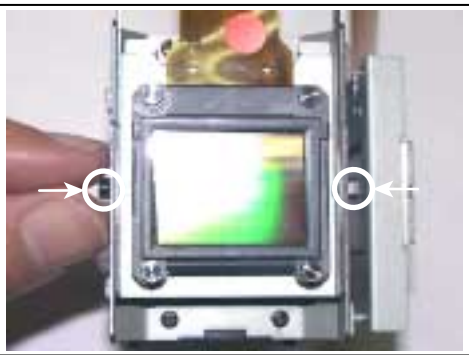
3-8. LCD Panel (Continued)

Step	Figure	Explanation
5		Remove 4 screws (M2.6 x 6). Screw : type [E-3]
6		Separate the LCD panel, mask and bracket. Note] Keep the mask because it is used again. The old LCD Panel and four screws are not used.
7		Remove 4 screws (M2 x 4). Screw : type [E-4] [Note] Keep the screws because they are used again.
8		Remove the bracket. [Note] This bracket will not use again.

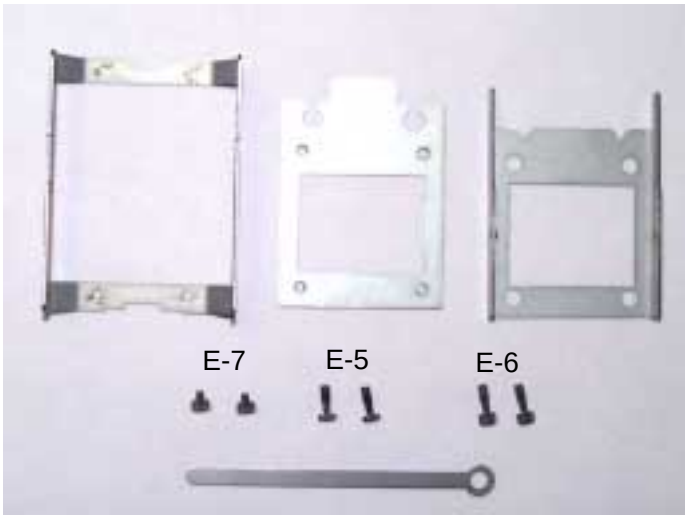
3-8. LCD Panel (Continued)

Step	Figure	Explanation
9		Use the panel holder Install a new panel with 4 screws. [Note] There are 2 kinds of types of the screw. (A) Side Screw : type [E-5] (B) Side Screw : type [E-6]
10		4 screws use for temporary tightening.
11		Tighten the new bracket with 4 screws (M2 x 4). Screw : type [E-4] [Note] This 4 screws are from the old bracket.

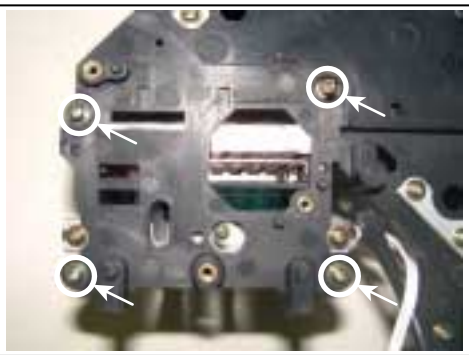
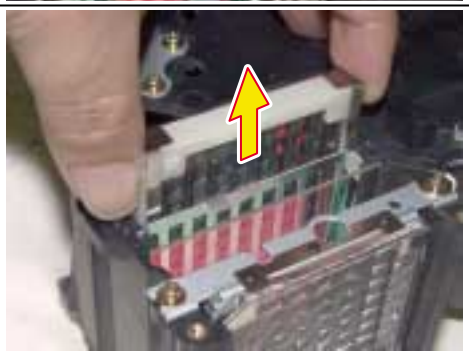
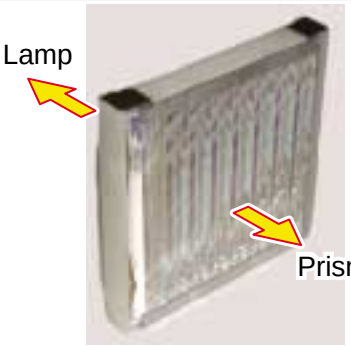
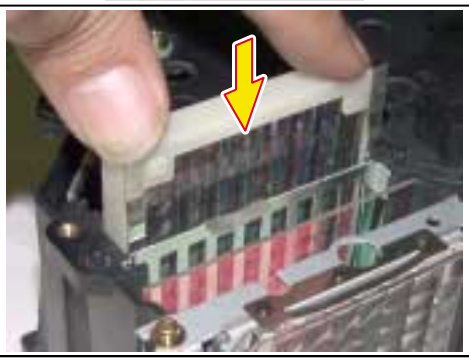
3-8. LCD Panel (Continued)

Step	Figure	Explanation
12		Install the LCD panel holder assembly made by step 9 to the prism block.
13		Fix the LCD panel holder assembly on the bracket with 2 screws (M2x2). Screw : type [E-7]
14		Fix a prism block on the lens block.

[Note] Panel holder service kit (23405001)



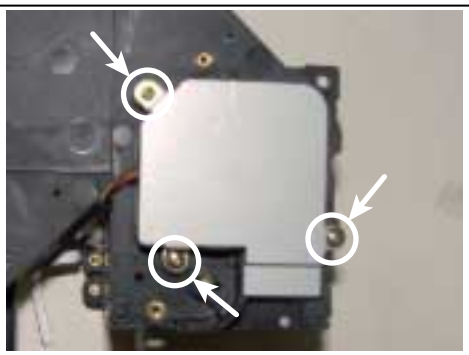
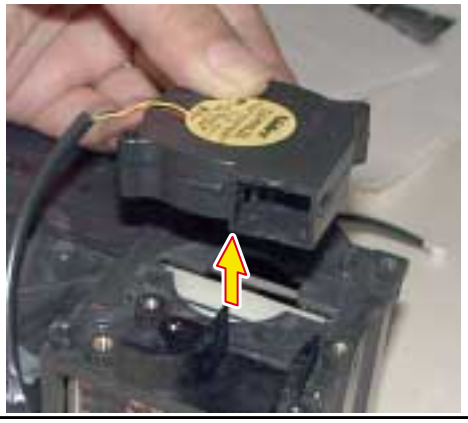
3-9. MULTI-PBS (Polarizing Beam Splitter)

Step	Figure	Explanation
1		Remove 4 screws (M2.5 x 8SW) . Screw : type [E-8]
2		Remove the fitting spring from the the gap.
3		Remove the Multi-PBS.
4		[Note] Make sure the direction of the PBS when you install.
5		Insert the new Multi-PBS.

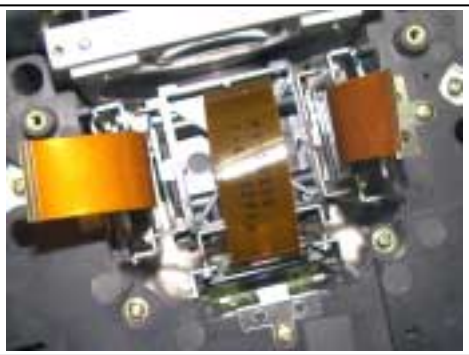
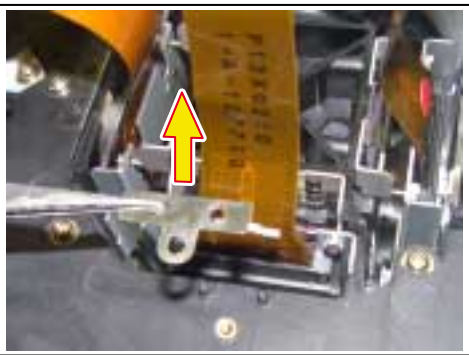
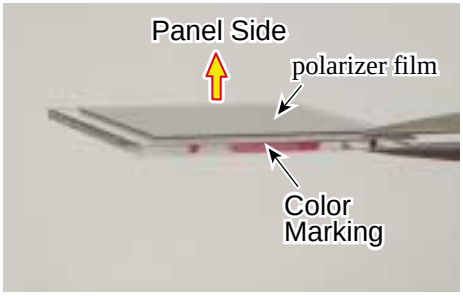
3-9. MULTI-PBS (Polarizing Beam Splitter) (Continued)

Step	Figure	Explanation
6		Install the fitting spring back to the gap.

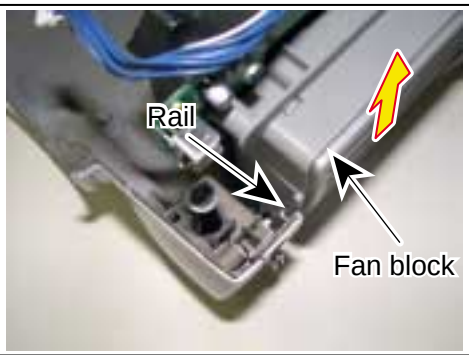
3-10. Optical Engine Cooling Fan

Step	Figure	Explanation
1		Remove 3 screws (M2.5 x 5SW) . Screw : type [E-11]
2		Remove the optical engine cooling fan.

3-11. Polarized Plate

Step	Figure	Explanation
1		Lift the stopper up by using the tweezers.
2		Remove the stopper.
3		Remove the polarized plate.
4		[Note] The film side must be faced to the LCD panel when installing and the color must be related with the color of LCD panel.

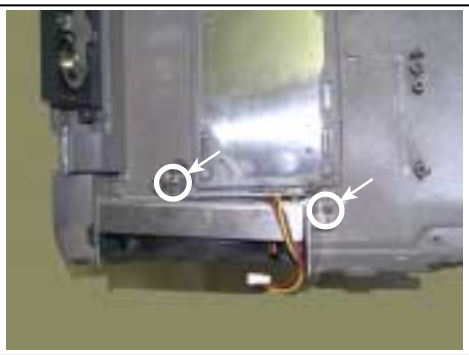
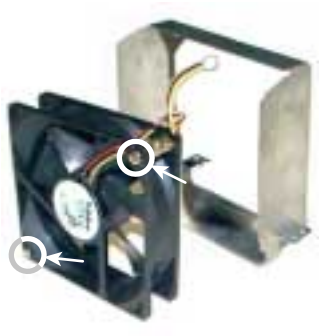
3-12. Intake Fan

Step	Figure	Explanation
1		Remove 1 screw (3 x 8). Screw : type [M-3]
2		Remove intake fan block from the bottom cabinet.(It pulls up along with a rail.)
3		Remove filter block from the intake fan block.
4		The filter is split like this.
5		Remove 3 screws (3 x 35). Screw : type [M-6]

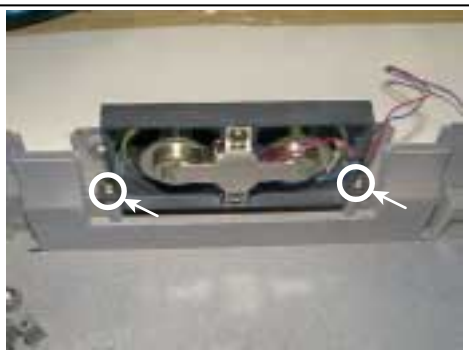
3-12. Intake Fan (Continued)

Step	Figure	Explanation
6		The intake fan block is divided into the fan, senser pcb, and bracket.

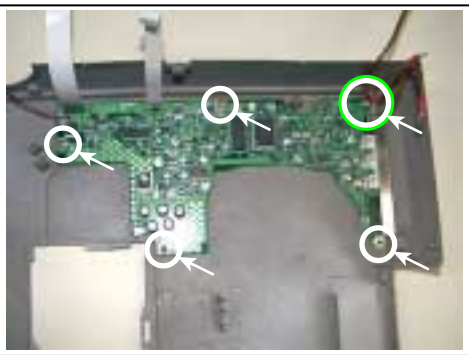
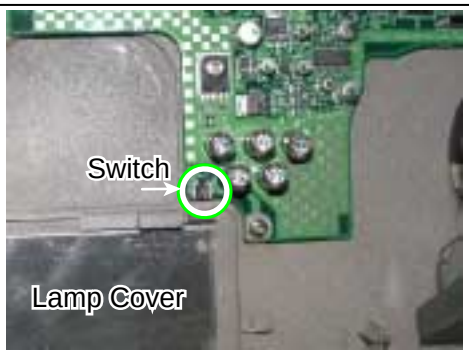
3-13. Exhaust Fan

Step	Figure	Explanation
1		Remove 2 screws (3 x 8). Screw : type [M-3]
2		Remove 2 screws (3 x 30). Screw : type [M-5]

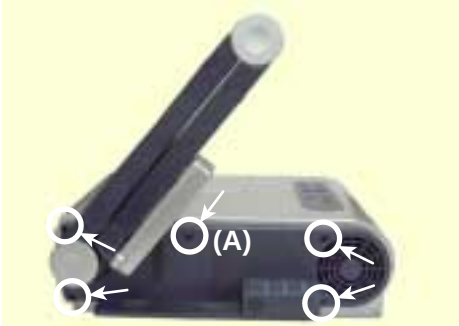
3-14. Speaker Block

Step	Figure	Explanation
1		Remove 2 screws (3 x 8). Screw : type [M-3]
2		Remove 2 screws (3 x 8). The speaker will be removed like this. Screw : type [M-3]

3-15. Video/Audio PC Board

Step	Figure	Explanation
1		Remove 5 screws (3 x 8). Screw : type [M-3] [Note] The screw here is also fixing the grand wire.(Green marked)
2		[Note] The safety interlock switch is pushed when the lamp cover is replaced.
3		Remove video/audio PC board from the terminal bracket.

3-16. Document camera (How to remove from the main body)

Step	Figure	Explanation
1		Remove 5 screws (M3 x 8). Screw : type [M-7] [Note] Please remove the screw (A) last. Then, support the camera block by hand, otherwise it falls.
2		Disconnect the connector from the main body. [Note] For disassembly of the document camera, refer to page 3-6.

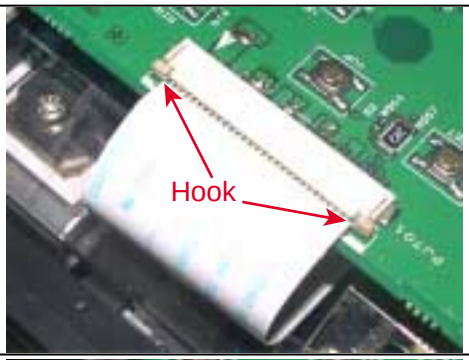
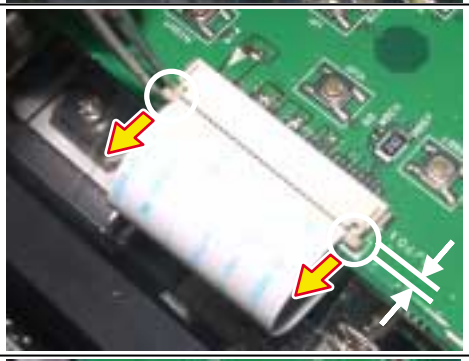
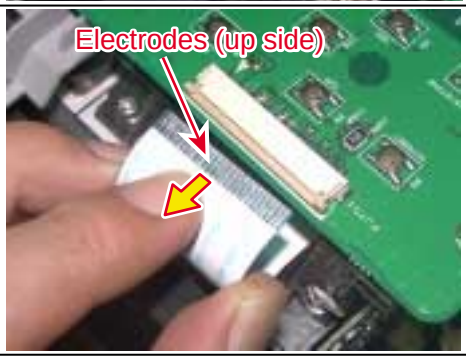
3-17. Screws for Mechanical Patrs

Type	Form	Size	Location
M-1		M3 x 6	Top Cover (11), Main PCB (7), Drive PCB (5), Ballast Power Supply (1), Video/audio PCB (5) and Lamp House (1)
M-2		2 x 4	Front Cover (3) and Rear Cover (3)
M-3		3 x 8	Power Supply (1), Ballast Power Supply (2), Ballast cable connector (1), Intake FAN (1), Optical Engine (1), Exhaust FAN (2) and Speaker Block (4)
M-4		3 x 12	Optical Engine (4)
M-5		3 x 30	Exhaust FAN (2)
M-6		3 x 35	Intake FAN (3)
M-7		M3 x 8	Document camera (5)

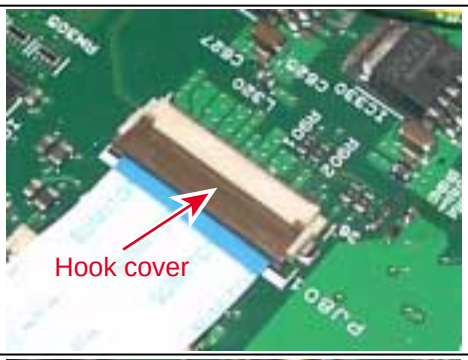
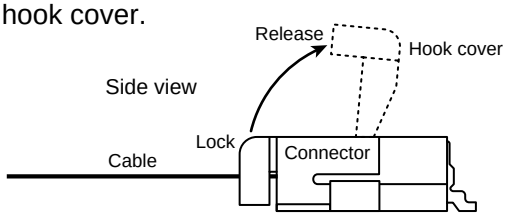
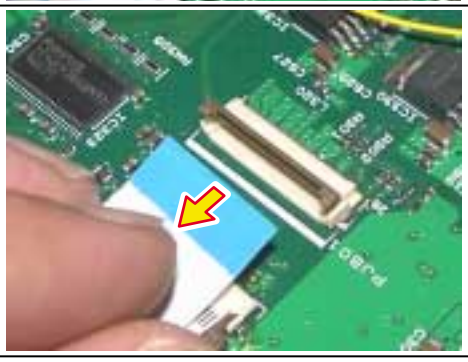
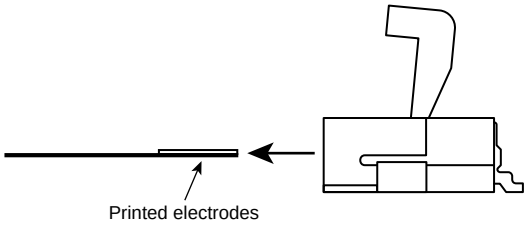
3-18. Screws for Optical Engine

Type	Form	Size	Location
E-1		M3 x 8SW	LCD PANEL (3)
E-2		M3 x 6SW	Power Supply (1)
E-3		M2.5 x 6	LCD PANEL (4) * This screw will not use again.
E-4		M2 x 4	Bracket (4)
E-5		M2.5 x 6	LCD Panel (connector side) (2) *Contained in Panel holder kit.
E-6		M2.5 x 6	LCD Panel (2) *Contained in Panel holder kit.
E-7		M2 x 2	LCD Panel Bracket (2) *Contained in Panel holder kit.
E-8		M2.5 x 8SW	Multi-PBS Cover (4)
E-9		M2.5 x 14SW	Optical Engine (1)
E-10		M3 x 12SW	LCD Panel (3)
E-11		M2.5 x 5SW	Optical Engine Cooling FAN (3)

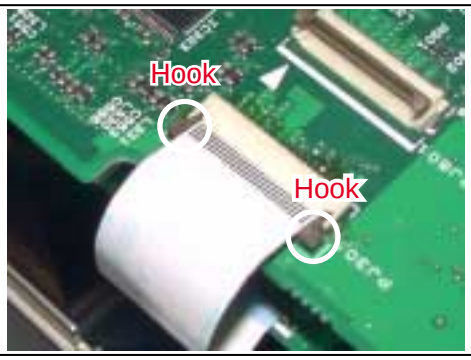
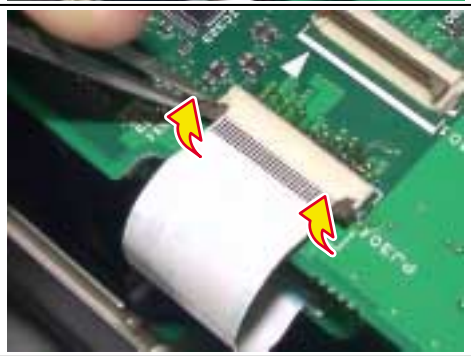
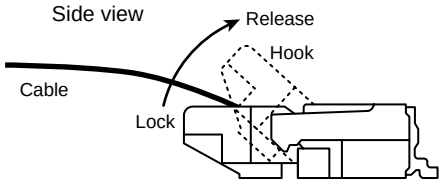
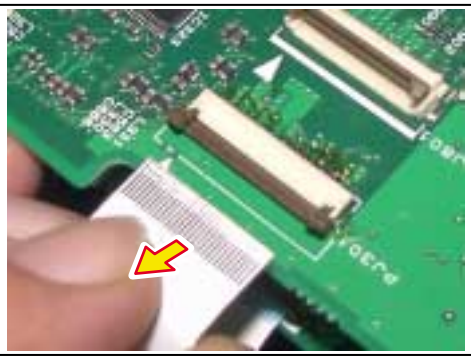
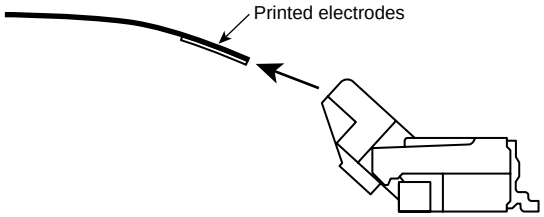
3-19. How to disconnect FFC/FPC Connector (1)

Step	Figure	Explanation
1		Conformity of Location number. MAIN PCB: PJ701
2		Release Two hooks. [Note] Hooks stop on the way. Please do not pull out by superfluous power.)
3		FFC/FPC cable can be disconnected.

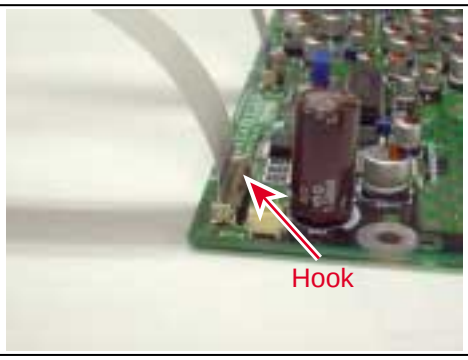
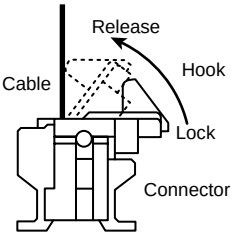
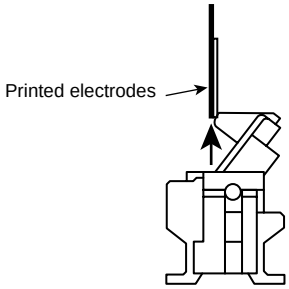
3-19. How to disconnect FFC/FPC Connector (2)

Step	Figure	Explanation
1		Conformity of Location number. MAIN PCB: PJ801 DRIVE PCB: PJ751
2		Release hook cover.  [Note] Hook cover stops on the way. Please do not pull out by superfluous power.
3		FFC/FPC cable can be disconnected. 

3-19. How to disconnect FFC/FPC Connector (3)

Step	Figure	Explanation
1		Conformity of Location number. MAIN PCB: PJ301, PJ802 DRIVE PCB: PJ851, PJ901, PJ951
2		Release tow hooks.  [Note] Hook stops on the way. Please do not pull out by superfluous power.
3		FFC/FPC cable can be disconnected. 

3-19. How to disconnect FFC/FPC Connector (4)

Step	Figure	Explanation
1		Conformity of Location number. VIDEO/AUDIO PCB: PJ1, PJ5
2		Release hook. Side view  [Note] Hook cover stops on the way. Please do not pull out by superfluous power.
3		FFC/FPC cable can be disconnected. 

4. OPTICAL ADJUSTMENT

4-1. Preparation

< Test Equipments and Test Jigs >

- Personal computer (Windows P/C, OS:windows 95/98)
- Adjustment software **SINGO98.exe**
- RGB cable
- A precise screwdriver (minus)
- Hexagon Wrench (include Panel holder service kit) (Refer to page 1-17)
- Extension cable kit (Refer to page 2-7)

(1) Setting

Put PJ on the horizontal place, and project it on the vertical screen.

(2) Remove top cover

Refer to page 1-3.

(3) Remove Main PC board

Refer to page 1-6.

(4) Connect LCD panels by using extension cables

- Connect PJ851 and R-Panel with extension cable.
- Connect PJ901 and G-Panel with extension cable.
- Connect PJ951 and B-Panel with extension cable.

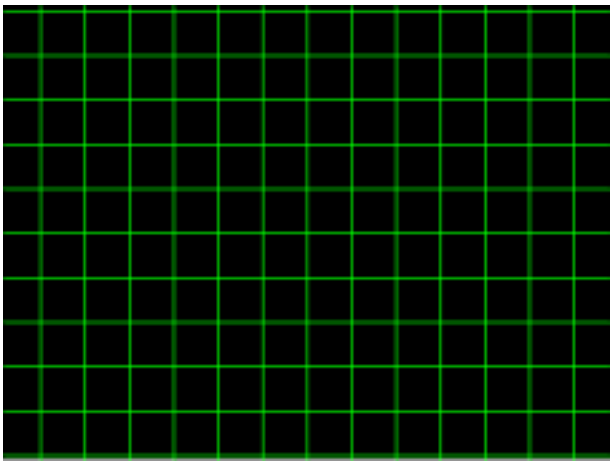
(5) Connect Main PC board by using extension cable kit

Be careful not to touch circuit and cabinet.

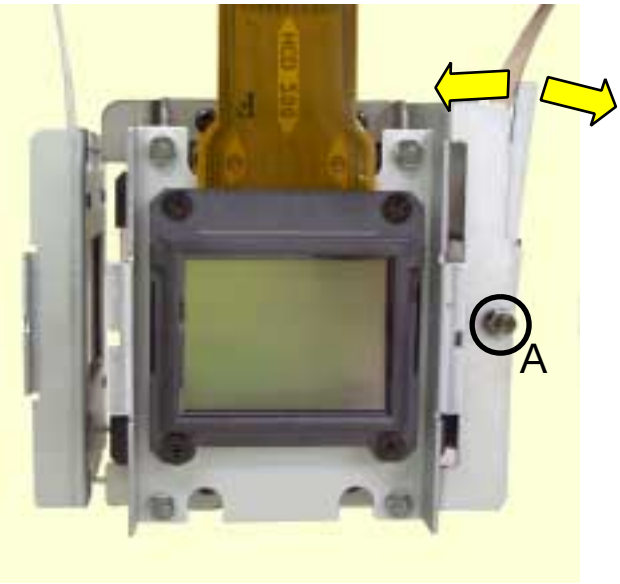
(6) Test Pattern Setup

- Connect a computer with RGB cable, and start the Pattern generating software (SINGO98.exe).

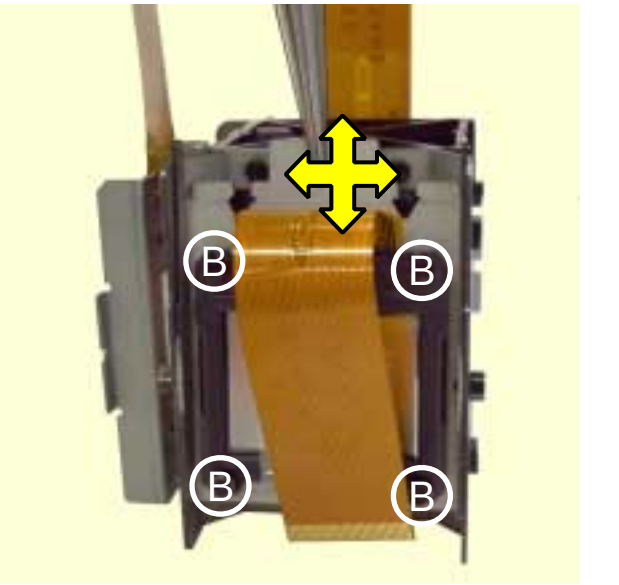
- Click cross hatch button.
- Click [R] and [B] button to display G-Cross Hatch.



(7) Focus Adjustment

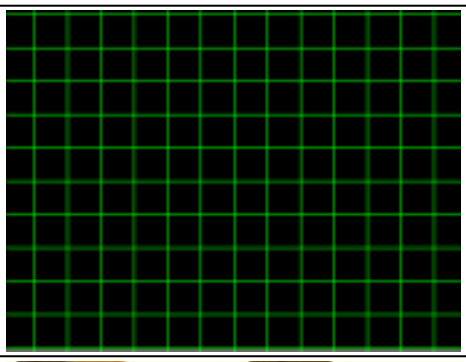
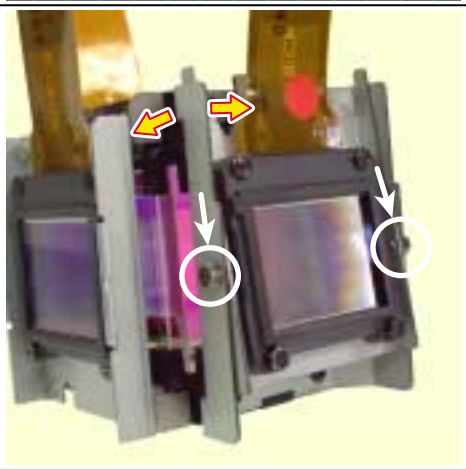
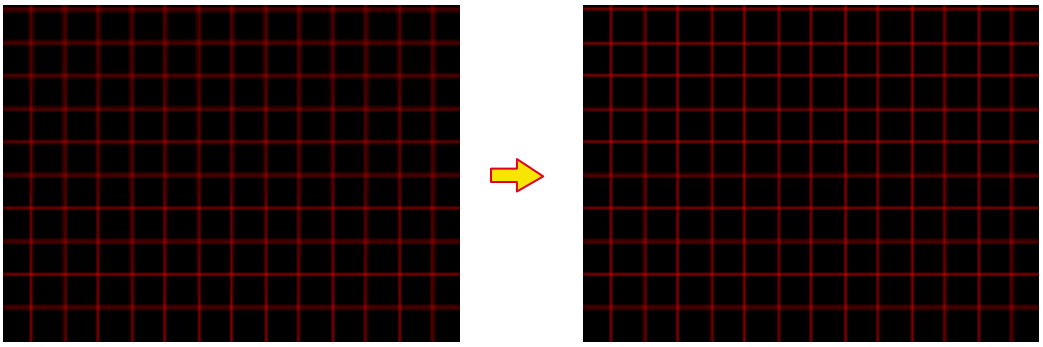
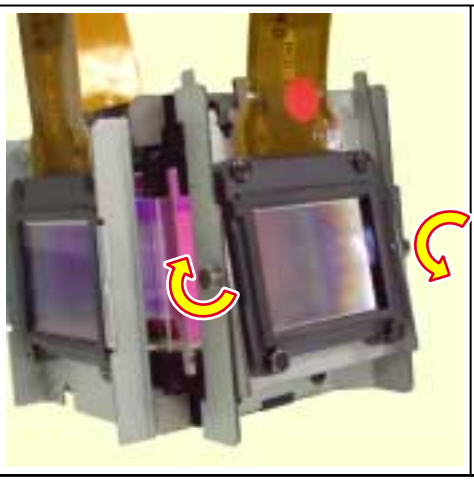


- When this screw (A) is loosened, the panel moves to front and back, and focus can be adjusted.

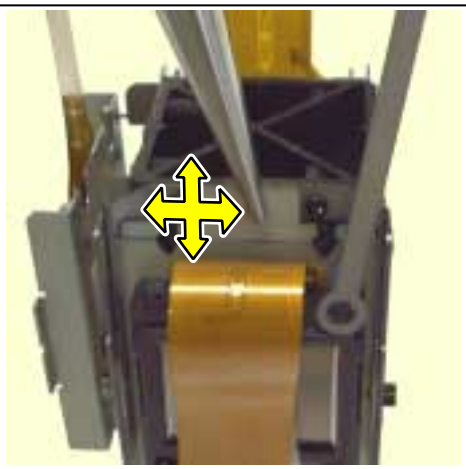
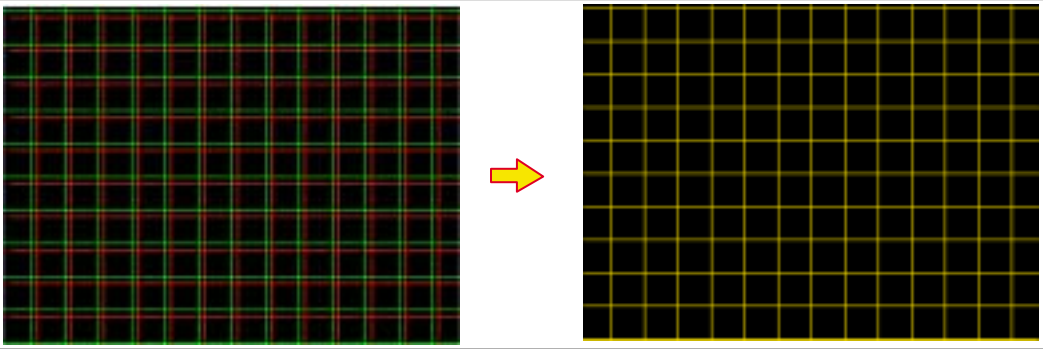
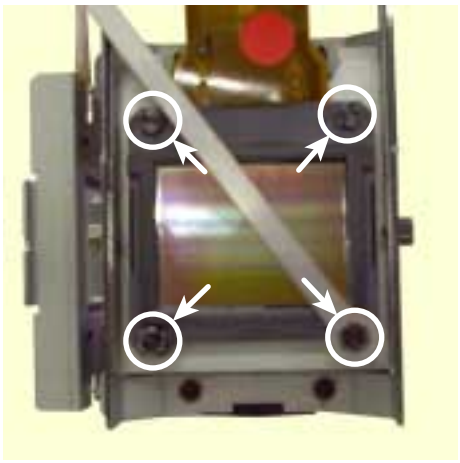


- When these screws (B) are loosened, the panel moves to left,right,up and down, and convergence can be adjusted.

4-2. Adjustment of Focus (ex. Red panel exchange)

Step	Figure	Explanation
1		TEST PATTERN : Green Cross Hatch Adjust focus by projection Lens.
2		TEST PATTERN : Red Cross Hatch Move the panel in front and back, and adjust the focus. Tighten two screws little by little.
3		
4		Tighten two screws, when you reached to the best focus point.

4-2. Adjustment of Focus (ex. Red panel exchange) (Continued)

Step	Figure	Explanation
5		TEST PATTERN : Red and Green Cross Hatch Move the panel in left, right, up and down, and adjust the convergence.
6		
7		Tighten four screws.

5. ELECTRICAL ADJUSTMENT

5-1. Preparation

< Test Equipments and Jigs >

- Personal computer (Windows P/C, OS:windows 95/98)
- Adjustment software
  SINGO98.exe, TLPX10S.exe, CNTX10S.exe
- RGB cable, Serial control cable (for RS-232C)
- Oscilloscope
- Digital voltmeter
- Extension cable kit (Refer to page 2-7)

< Connection and Setting of Personal Computer >

(1) Connection of personal computer

Connect a computer as shown in following Fig. 1-4-1.
Use the supplied serial control cable for connection.

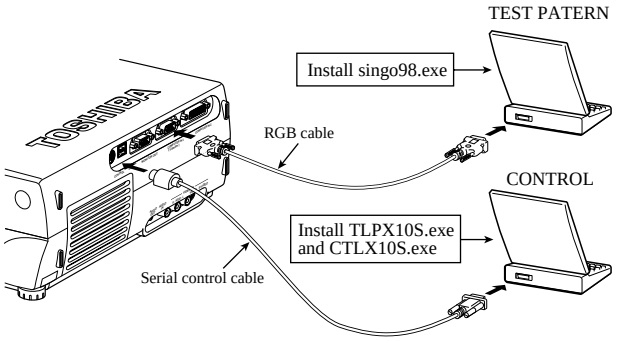


Fig. 1-4-1

(2) Data download/upload software

When the download software (CTLX10S.EXE) is started, screen like the following image (Fig. 1-4-2)

Fig. 1-4-2

(3) Adjustment software

Electrical adjustment is carried out using the adjustment software. When the software (TLPX10S.EXE)is started, a screen like the following image (Fig. 1-4-3) appears.

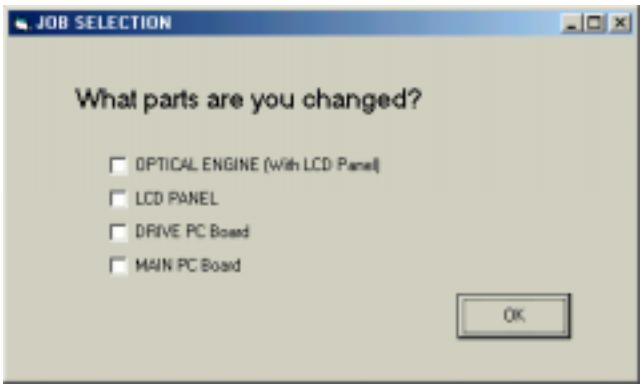
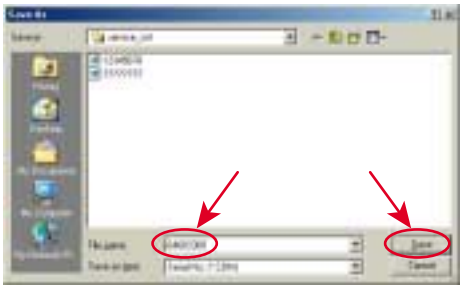
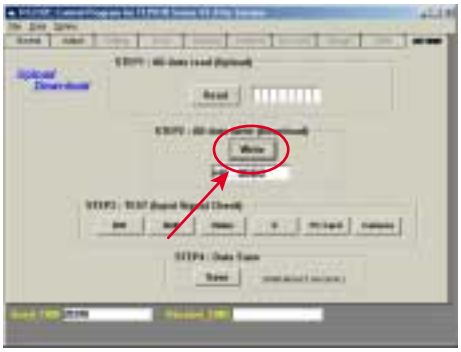


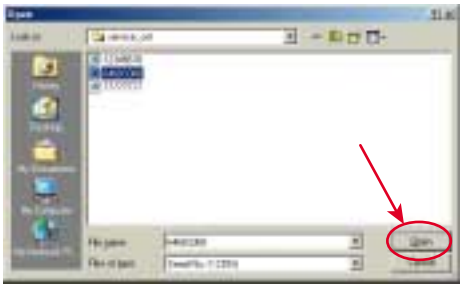
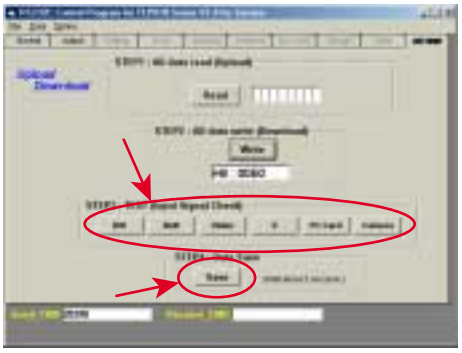
Fig. 1-4-3

(Note)

Electrical adjustment menu changes automatically by pressing [next] button with every step. This software transmits the necessary command automatically.

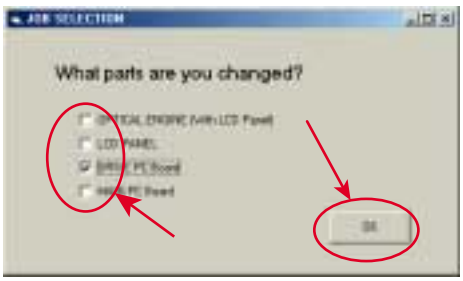
5-2. All adjust data download (When the Main PC board will be replaced.)

Step	Figure	Explanation
1		Start the download software (CNTX10S.exe). Press [UP/DW] tab.
2		Press [Read] button. The all data will be read form projector in a few minutes.
3		When a dialog is indicated, it finishes reading all data. Key in the file name (=Serial Number). Press [Save] button to save the data.
4		After replacing the Main PC Board, press [Write] button.

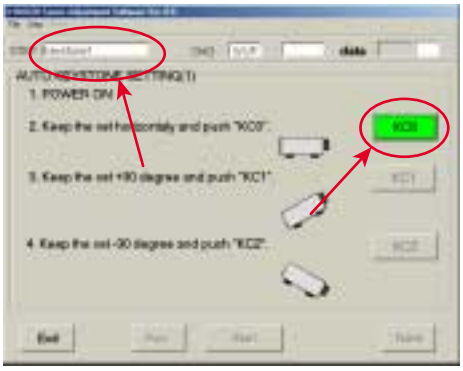
Step	Figure	Explanation
5		When this dialog is indicated, select the data file (=Serial Number). Press [Open] button.
6		When this message screen appears, press [ok] button. Then, all data (in the old PCB) will be written to the projector.
7		Check the all input signals. All input signals is fare, press [Save] Button.

5-3. Electrical adjustment

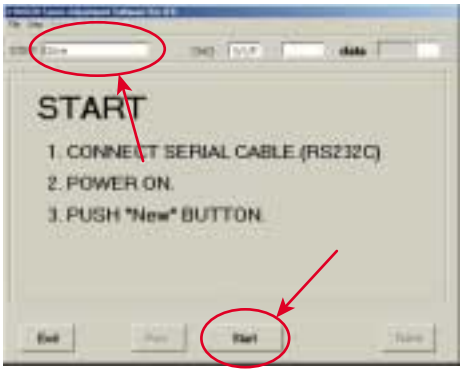
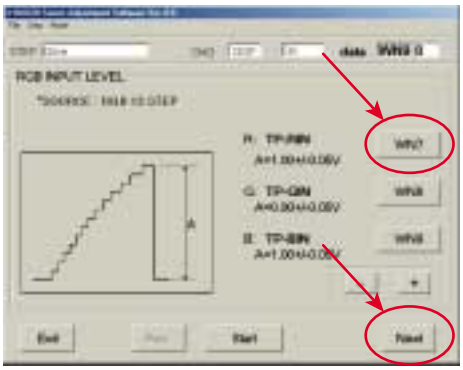
5-3-1. Menu selection

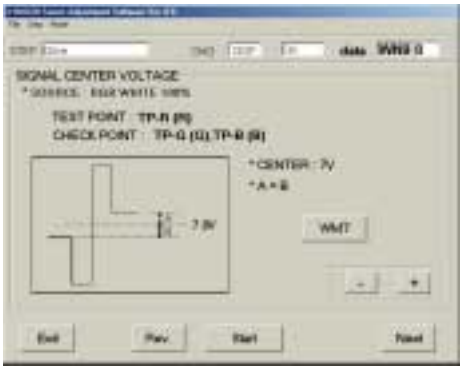
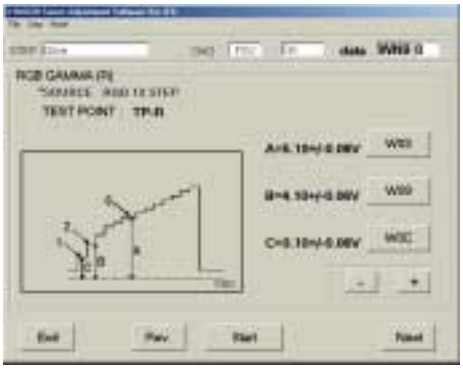
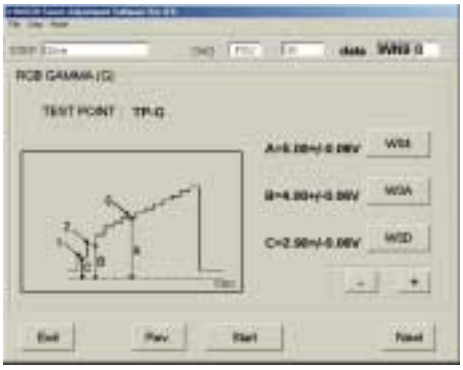
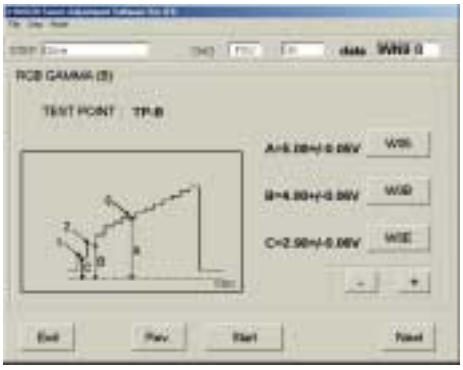
Step	Figure	Explanation
1		Start the download software (TLPX10S.exe). Select the parts that you changed. Press [OK] button.

5-3-2. Keystone setting (1) (In case of Main PCB was changed.)

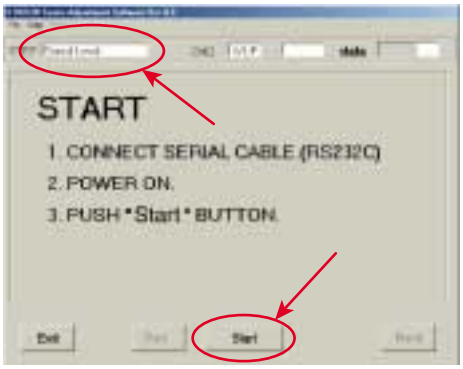
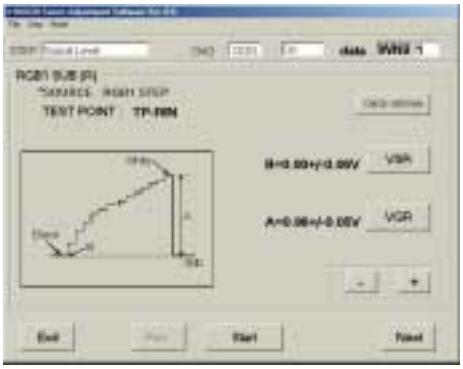
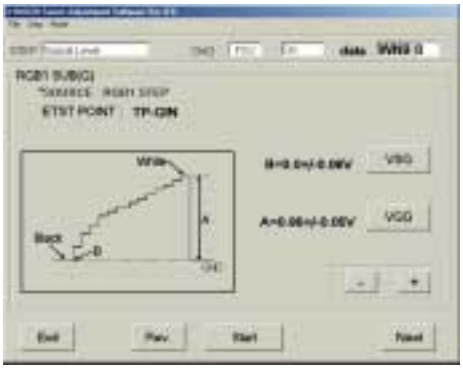
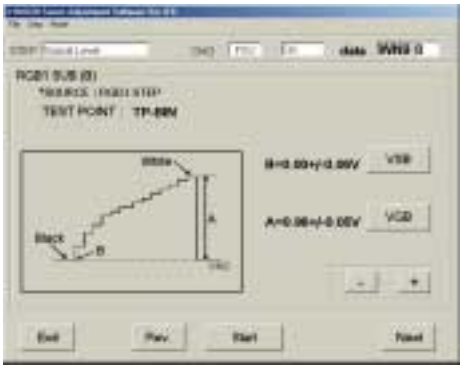
Step	Figure	Explanation
1		(1) Select "Keystone1" step. (2) Set the projector horizontally, and click [KC0] button. (3) Set the projector to a +30 degree angle, and click the [KC1] button. (4) Set the projector to a -30 degree angle, and click [KC2] button. (5) Press [Next] button. [Note] * A green button is available. * All the data is saved, when [Next] button is pushed.

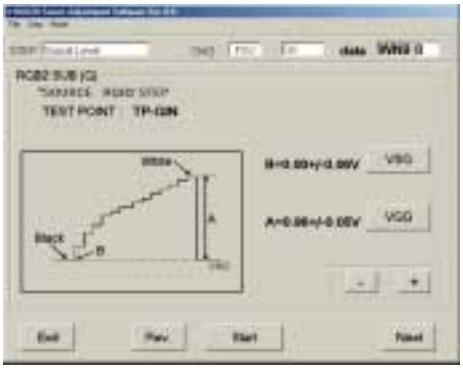
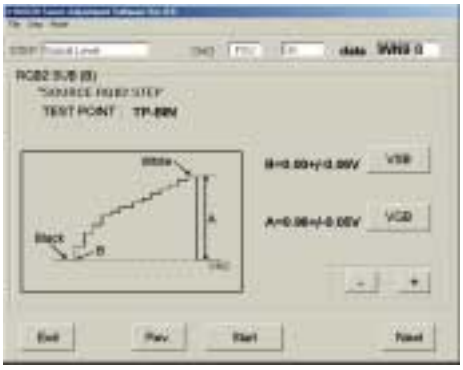
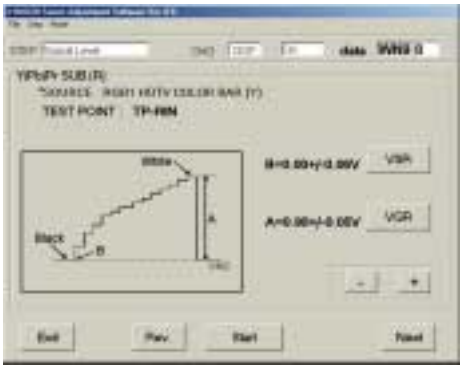
5-3-3. Drive setting (DVI signal)

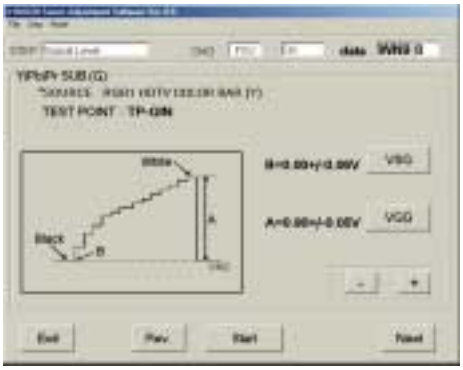
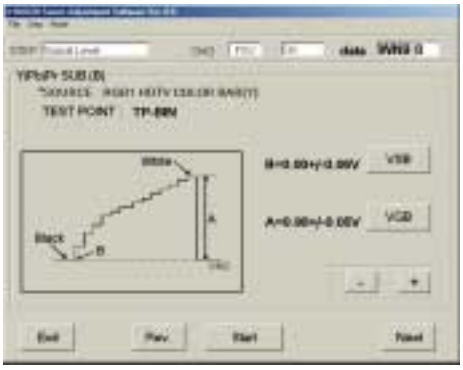
Step	Figure	Explanation
1		Use the extension cable kit.
2		(1) Select "Drive" step. (2) Press [Start] button.
3		(1) Monitor the waveform at the respective test point ("TP-RIN" when you adjust the R level). (2) When the [WN7] button is clicked, you enter the "R" adjustment mode. (3) Click [+] or [-] button to adjust the signal level. (4) Adjust "G" and "B" colors to be the same. (5) Click [Next] button to proceed to the next adjustment.

Step	Figure	Explanation
4		(1) Monitor the waveform at the test point "TP-R". (2) Click [WM7] button and adjust to the specified level. (3) Check the voltage at the test points "TP-R" and "TP-B". (4) Click [Next] button. [Note] "G" and "B" levels also change when [WM7] adjustment is performed.
5		(1) Monitor the waveform at test point "TP-R". (2) Click [W03] button and adjust to the specified level. ([W09] and [W0C] are the same process.) (3) Click [Next] button.
6		(1) Monitor the waveform at test point "TP-G". (2) Click [W04] button and adjust to the specified level. ([W0A] and [W0D] are the same process.) (3) Click [Next] button.
7		(1) Monitor the waveform at test point "TP-B". (2) Click [W05] button and adjust to the specified level. ([W0B] and [W0E] are the same process.) (3) Click [Next] button.

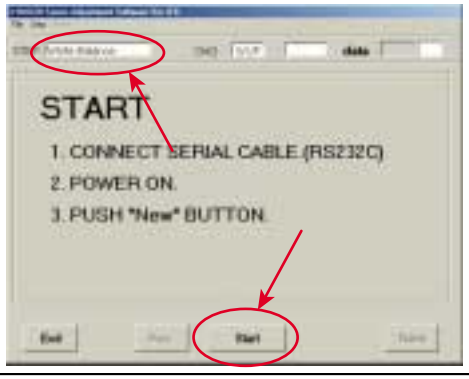
5-3-4. Setting signal level

Step	Figure	Explanation
1		(1) Select "Signal level" step. (2) Press [Start] button.
2		(1) Press [VSR] button and click [+] or [-] button to adjust the signal level. (2) Press [VGR] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.
3		(1) Press [VSG] button and click [+] or [-] button to adjust the signal level. (2) Press [VGG] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.
4		(1) Press [VSB] button and click [+] or [-] button to adjust the signal level. (2) Press [VGB] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.

Step	Figure	Explanation
5		(1) Press [VSR] button and click [+] or [-] button to adjust the signal level. (2) Press [VGR] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.
6		(1) Press [VSG] button and click [+] or [-] button to adjust the signal level. (2) Press [VGG] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.
7		(1) Press [VSB] button and click [+] or [-] button to adjust the signal level. (2) Press [VGB] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button.
8		SOURCE : DVD Color bar component Y signal. (1) Press [VSR] button and click [+] or [-] button to adjust the signal level. (2) Press [VGR] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button. **NOTE: Display image disappears when [VSR] button is pushed.**

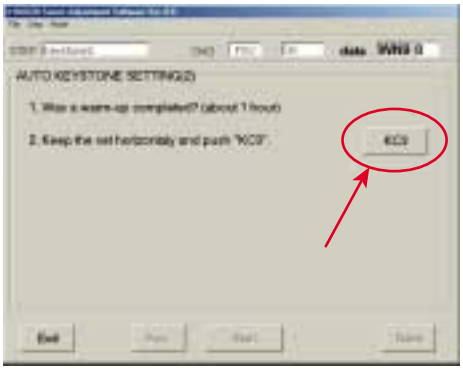
Step	Figure	Explanation
9		(1) Press [VSG] button and click [+] or [-] button to adjust the signal level. (2) Press [VGG] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button. **NOTE: Display image disappears when [VSG] button is pushed.**
10		(1) Press [VSB] button and click [+] or [-] button to adjust the signal level. (2) Press [VGB] button and click [+] or [-] button to adjust the signal level. (3) Press [Next] button. **NOTE: Display image disappears when [VSB] button is pushed.**
11		(1) Select a red single color screen when adjusting R. Click [WM6] button, and adjust the flicker level to minimum in both + and - directions, taking note of the data values. Then set data to the mid-point between the two previously noted values. (2) Adjust other colors to be the same, using [WM5] for green and [WM4] for blue. (3) Click [Upside Down] button to change projection mode. (4) Adjust this mode in the same way. (5) Click [Next] buttons.

5-3-5. White balance

Step	Figure	Explanation
1		(1) Select "White Balance" step. (2) Press [Start] button.

Step	Figure	Explanation
2		(1) Click [W03] and/or [W05] buttons, and adjust screen until it becomes a natural gray. (2) Click [W09] and/or [W09] or [W0A] buttons, and adjust screen until it becomes a natural gray. (3) Click [Next] button.
3		(1) Click [WN7] and/or [WN9] buttons, and adjust screen until it becomes a natural gray. (2) Click [Next] button.

5-3-6. Keystone setting (2)

Step	Figure	Explanation
1		(1) Set the projector horizontally, and click [KC3] button. **[Note - Important]** **The deviation of the inclination sensor due to rise in temperature is corrected by measuring after warming up for approximately one hour.**
2		When the adjustment is completed, press [OK] button.

SECTION 2
SERVICING DIAGRAMS

1. TROUBLE SHOOTING

CAUSE	CHECK POINT	CHEK ITEM	JUDGE
Power is not on	Flat cable of Power supply (disconnect PJ701)	Standby voltage (See page 2-4)	(NG) → Power supply is NG. (OK) → Check next step.
	PJ701(connect PJ701)	Standby voltage	(NG) → Main PCB is NG, or any cable connection is NG.
Power off during use	LED Display	Lighting pattern	See 2-2
Lamp is not on	Lamp	Any damage inside or not	(Damaged) → Change with new lamp. (Not Damaged) → Check Lamp cover, PJ11 or lamp power supply. However, even if the lamp has no damage, there is the case it has trouble also.
No image	"No Signal" OSD message	Indicated or not	(Indicated) → RGB/Video terminal is NG, or Main PCB is NG. (Not Indicated) → Check next step.
	Test Point TP-R TP-G TP-B	Signal shape	(Correct) → LCD panel is NG, or PJ851/PJ901/PJ951 is NG. (Incorrect) → Main PCB is NG.

ATTENTION

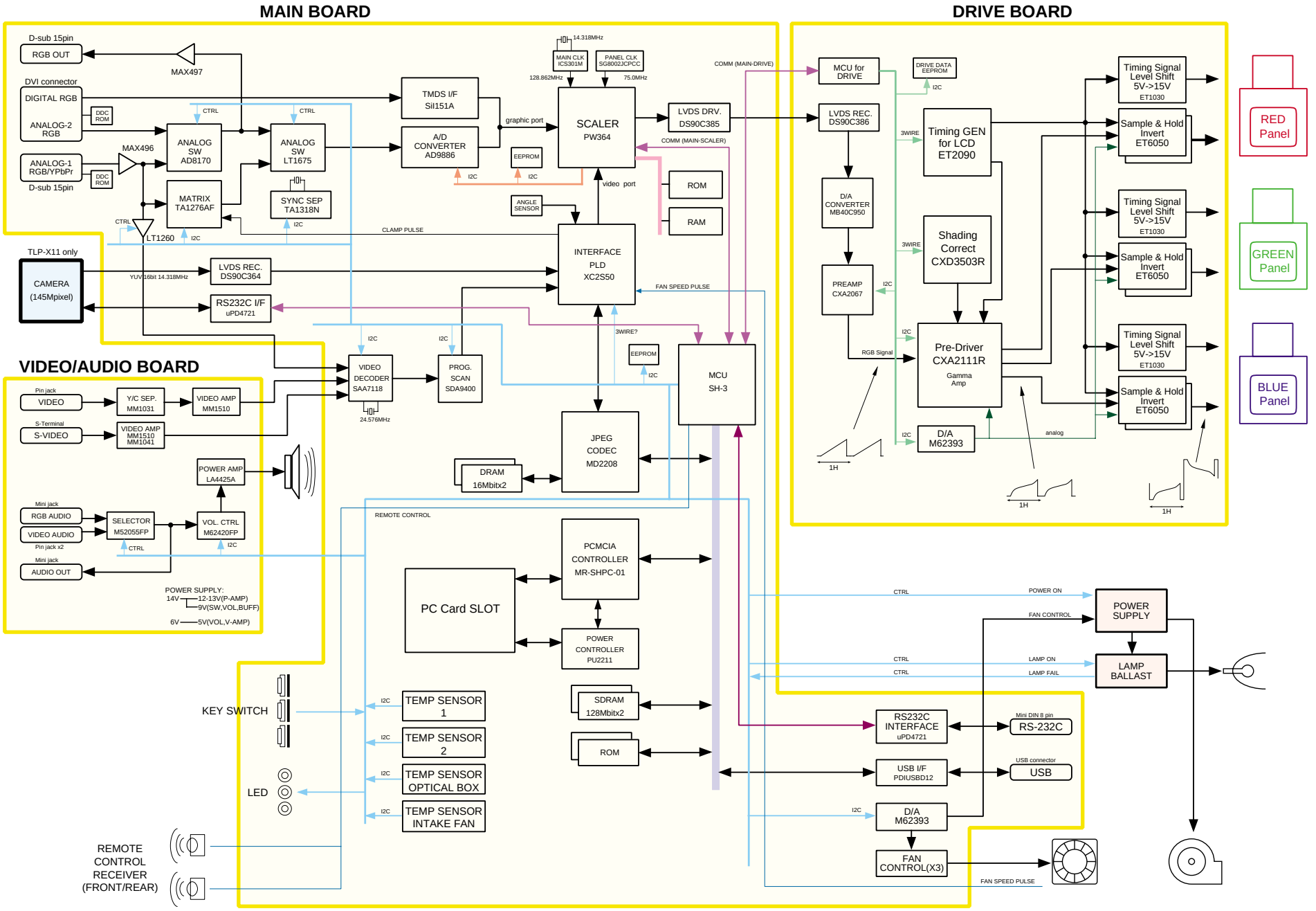
LED displays various error pattern. (See 2-2)
Be careful because the same error occurs in the bad contact of the cable as well.
LED error combination display always show the latest error.

2. LED DISPLAY (Problems Shown on LED Indicator Combination)

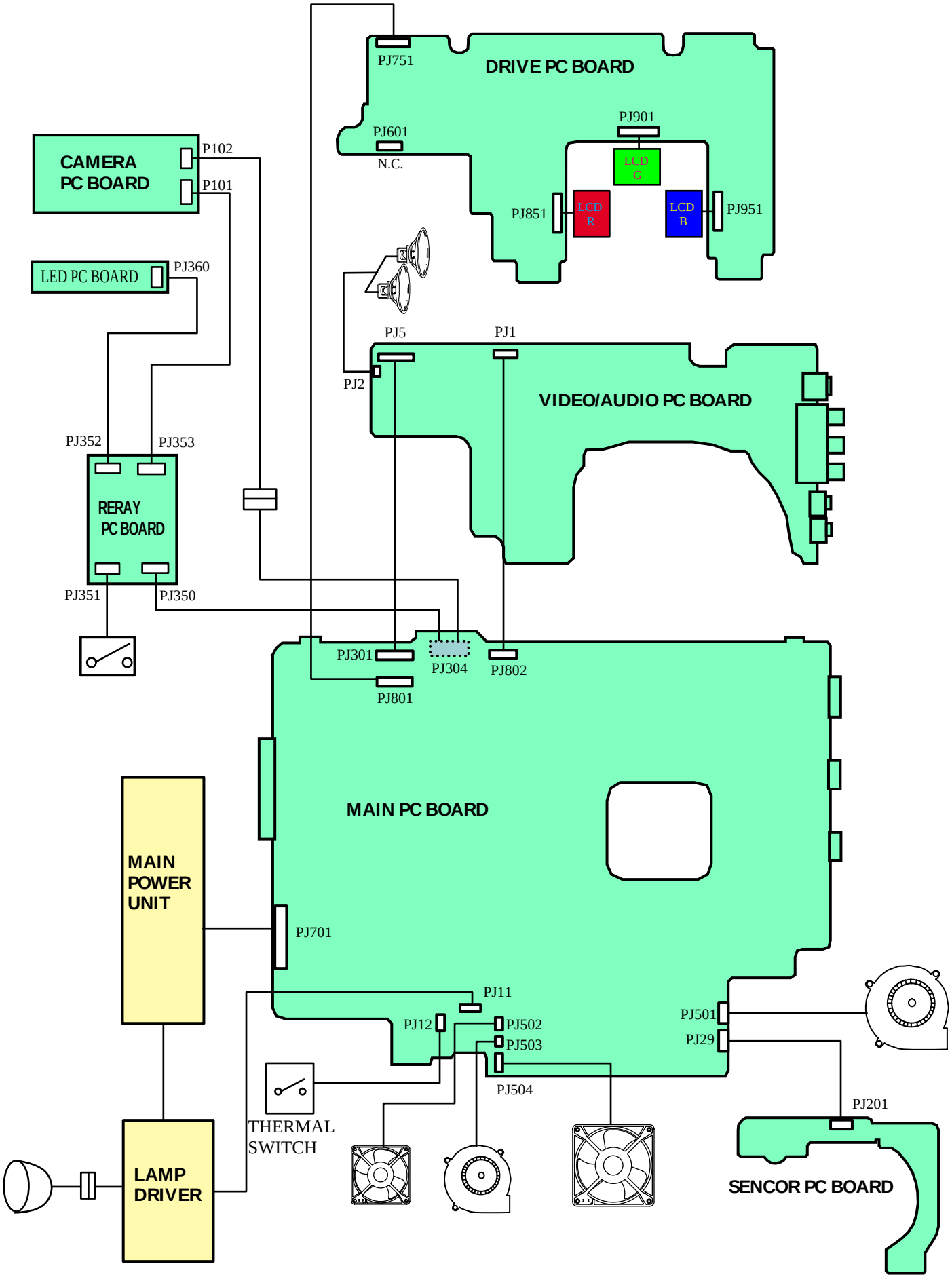
Status of Indicator Light			Cause and Trouble	Solution
TEMP BUSY	LAMP	ON FAN		
(OFF) (OFF)	(OFF)	(OFF) (OFF)	Standby-power is not on > There's a problem with the power unit or system microcomputer.	Check the power unit. Check the connector (PJ12).
(OFF) (OFF)	(OFF)	(RED) (OFF)	Power is not on > There's a problem with the system microcomputer.	Check the main PC board.
(OFF) (OFF)	(RED)	(RED) (OFF)	The lamp went out during use or the lamp will not switch on > The bulb has reached the end of it's life	Change new lamp. There may also be trouble in ballast power supply.
(RED) (OFF)	(OFF)	(RED) (OFF)	The power turns off or does not come on > The inside is too hot, or the projector has been working in an area of high temperature.	Place the projector correctly so the intake and exhaust fan's holes are not covered. Turn the projector off, and leave it for a while, and turn it on again. Clean the air filter.
(RED) (OFF)	(OFF)	(RED) (GREEN)		
(Orange) (OFF)	(OFF)	(RED) (OFF)		
(Orange) (OFF)	(OFF)	(RED) (GREEN)		
(GREEN) (OFF)	(OFF)	(RED) (OFF)		
(GREEN) (OFF)	(OFF)	(RED) (GREEN)		
(OFF) (OFF)	(OFF)	(RED) (RED)	The power turns off or does not come on > Trouble with the cooling fans.	Check the each cooling fan.
(OFF) (OFF)	(OFF)	(RED) (RED Flashing)		
(OFF) (OFF)	(OFF)	(RED) (Orange)		
(OFF) (OFF)	(OFF)	(RED) (Orange flashing)		
(OFF) (OFF)	(Orange flashing)	(RED) (OFF)	The power turns off or does not come on >Trouble with the Lamp cover	The lamp cover is not properly attached. Unplug the power cord and reattach the lamp cover.
(OFF) (OFF)	(Orange)	(RED) (GREEN)	The power turns off > System error.	Wait for two minutes, and turn on the power again.

NOTE

In each mode shown with this color, the projector returns to the standby mode after error indication for about 2 minutes.


MAIN BOARD
DRIVE BOARD
VIDEO/AUDIO BOARD
D-sub 15pin
RGB OUT
MAX497
DVI connector
DIGITAL RGB
ANALOG-2 RGB
DDC ROM
ANALOG-1 RGB/YPbPr
MAX496
D-sub 15pin
ANALOG SW AD8170
ANALOG SW LT1675
MATRIX TA1276AF
SYNC SEP TA1318N
LT1260
CTRL
I2C
TMDS I/F Sil151A
A/D CONVERTER AD9886
graphic port
14.318MHz
MAIN CLK ICS301M
128.862MHz
PANEL CLK SG8002JCPCC
75.0MHz
SCALER PW364
EEPROM
ANGLE SENSOR
video port
ROM
RAM
LVDS DRV. DS90C385
COMM (MAIN-DRIVE)
COMM (MAIN-SCALER)
CLAMP PULSE
INTERFACE PLD XC2S50
FAN SPEED PULSE
3WIRE?
TLP-X11 only
CAMERA (145Mpixel)
YUV 16bit 14.318MHz
LVDS REC. DS90C364
RS232C I/F uPD4721
VIDEO DECODER SAA7118
24.576MHz
PROG. SCAN SDA9400
MCU SH-3
JPEG CODEC MD2208
DRAM 16Mbitx2
REMOTE CONTROL
Pin jack
VIDEO
Y/C SEP. MM1031
VIDEO AMP MM1510
S-Terminal
S-VIDEO
VIDEO AMP MM1510 MM1041
POWER AMP LA4425A
Mini jack
RGB AUDIO
VIDEO AUDIO
Pin jack x2
SELECTOR M52055FP
VOL. CTRL M62420FP
Mini jack
AUDIO OUT
POWER SUPPLY:
14V
12-13V(P-AMP)
9V(SW,VOL,BUFF)
6V
5V(VOL,V-AMP)
PC Card SLOT
PCMCIA CONTROLLER MR-SHPC-01
POWER CONTROLLER PU2211
SDRAM 128Mbitx2
ROM
KEY SWITCH
LED
TEMP SENSOR 1
TEMP SENSOR 2
TEMP SENSOR OPTICAL BOX
TEMP SENSOR INTAKE FAN
REMOTE CONTROL RECEIVER (FRONT/REAR)
MCU for DRIVE
DRIVE DATA EEPROM
LVDS REC. DS90C386
D/A CONVERTER MB40C950
PREAMP CXA2067
RGB Signal
Timing GEN for LCD ET2090
3WIRE
Shading Correct CXD3503R
Pre-Driver CXA2111R
Gamma Amp
D/A M62393
analog
1H
Timing Signal Level Shift 5V->15V ET1030
Sample & Hold Invert ET6050
RED Panel
GREEN Panel
BLUE Panel
POWER ON
FAN CONTROL
LAMP ON
LAMP FAIL
POWER SUPPLY
LAMP BALLAST
RS232C INTERFACE uPD4721
Mini DIN 8 pin
RS-232C
USB I/F PDIUSBD12
USB connector
USB
D/A M62393
FAN CONTROL(X3)
FAN SPEED PULSE

4. WIRING BLOCK DIAGRAM



5. CONNECTOR PIN ASSIGNMENT

PJ11 (MAIN) ⟷ PJ504 (LAMP DRIVER)

1	LAMP POWER	+1.3V(on) / 0V(off)
2	GND	0V
3	LAMP ERROR	(error) / 0V(normal)
4	LAMP PWR CONT	(Low) / 0V(High)
5	+6.15V (SWITCHED)	+6.15V(error) / 0V(normal)

PJ12 (MAIN) ⟷ THERMAL SWITCH

1	+6.15V (SWITCHED)	0V
2	+6.15V	+6.15V

PJ29 (MAIN) ⟷ PJ201 (SENSOR)

1	GND	0V
2	GND	0V
3	SHS+5V	+5V
4	SHTMP +3.3V	+3.3V/0V
5	SHS+5V	+5V
6	SHV3V_SCL	+3.3V/0V
7	SHV3V_SDA	+3.3V/0V
8	GND	0V
9	GND	0V

PJ301 (MAIN) ⟷ PJ751(DRIVE)

1	GND	0V
2	GND	0V
3	+17V	+17V
4	+17V	+17V
5	+17V	+17V
6	GND	0V
7	GND	0V
8	+6.5V	+6.5V
9	+6.5V	+6.5V
10	+6.5V	+6.5V
11	GND	0V
12	+4.5V	+4.5V
13	+4.5V	+4.5V
14	GND	0V
15	GND	0V
16	DRV_TX	+/- 7V (data)
17	DRV_RX	+/- 7V (data)
18	GND	0V
19	TXOUT0+	+3.3V(Pulse)
20	TXOUT0-	+3.3V(Pulse)
21	TXOUT1+	+3.3V(Pulse)
22	TXOUT1-	+3.3V(Pulse)
23	TXOUT2+	+3.3V(Pulse)
24	TXOUT2-	+3.3V(Pulse)
25	TXOUT3+	+3.3V(Pulse)
26	TXOUT3-	+3.3V(Pulse)
27	TXCLKOUT+	+3.3V(Pulse)
28	TXCLKOUT-	+3.3V(Pulse)
29	GND	0V
30	GND	0V

PJ304 (MAIN) ⟷ PJ350 (RELAY), P102 (CAMERA UNIT)

1	RXIN0-	+1.5V(Pulse)
2	RXIN0+	+1.5V(Pulse)
3	RXIN1-	+1.5V(Pulse)
4	RXIN1+	+1.5V(Pulse)
5	RXIN2-	+1.5V(Pulse)
6	RXIN2+	+1.5V(Pulse)
7	RXIN3-	+1.5V(Pulse)
8	RXIN3+	+1.5V(Pulse)
9	GND	0V
10	GND	0V
11	-9V	-9V
12	+17V	+17V
13	GND	0V
14	GND	0V
15	CAMRX	+/- 7V (data)
16	+5V	+5V
17	CAM TX	+/- 7V (data)
18	CAM DET	0V
19	CAM REM	+5V
20	CAM LIGHT	+5V
21	MAIN POER	+5V
22	CAM KEY0	+5V
23	CAM LED	+5V
24	CAM KEY1	+5V
25	CAM RES	+5V
26	CAM KEY2	+5V
27	CAM ARM	+5V
28	CAM KEY3	+5V
29	CAM KEY5	+5V
30	CAM KEY4	+5V

PJ501 (MAIN) ⟷ INTAKE FAN

1	FAN4 CONTROL V	6 to +13V
2	GND	0V
3	FAN4 PULSE	+3.3V(Pulse)

PJ502 (MAIN) ⟷ PBS FAN (OPTICSL ENGINE)

1	FAN1 CONTROL V	6 to +13V
2	GND	0V
3	FAN1 PULSE	+3.3V(Pulse)
4	N.C.	0V

PJ503 (MAIN) ⟷ COOLING FAN (OPTICAL ENGINE)

1	FAN2 CONTROL V	6 to +13V
2	GND	0V
3	FAN2 PULSE	+3.3V(Pulse)

PJ504 (MAIN) ⟷ EXHAUST FAN

1	FAN3 CONTROL V	6 to +13V
2	GND	0V
3	FAN3 PULSE	+3.3V(Pulse)
4	N.C.	0V

PJ701 (MAIN) ⟷ POWER SUPPLY

1	+4.5V	+4.5V
2	+4.5V	+4.5V
3	+4.5V	+4.5V
4	GND	0V
5	GND	0V
6	GND	0V
7	+6.5V	+6.5V
8	+6.5V	+6.5V
9	+6.5V	+6.5V
10	GND	0V
11	AUDIO GND	0V
12	AUDIO GND	0V
13	+14V_2	+14V
14	+14V_2	+14V
15	GND	0V
16	GND	0V
17	FAN4 CONTROL V	+6.5V
18	GND	0V
19	+14V_1	+14V
20	GND	0V
21	+17V	+17V
22	GND	0V
23	-9V	-9V
24	GND	0V
25	LAMP POWER CNOT	0V
26	FAN4 CONT	+4.5V
27	FAN ON/OFF	+4.5V
28	GND	0V

PJ801 (MAIN) ⟷ PJ5 (VIDEO/AUDIO)

1	+14V_1	+14V
2	+14V_1	+14V
3	GND	0V
4	GND	0V
5	+5.5V	+5.5V
6	+5.5V	+5.5V
7	+5.5V	+5.5V
8	GND	0V
9	GND	0V
10	GND	0V
11	+4.5V	+4.5V
12	+4.5V	+4.5V
13	GND	0V
14	GND	0V
15	+14V_1	+14V
16	+14V_1	+14V
17	+14V_1	+14V
18	+14V_1	+14V
19	AUDIO GND	0V
20	AUDIO GND	0V
21	AUDIO GND	0V
22	AUDIO GND	0V
23	MAIN POWER	+5.5V/0V
24	AUDIO POWER	+5.5V/0V
25	GND	0V
26	GND	0V
27	SHV3V_SCL	+3.3V/0V
28	SHV3V_SDA	+3.3V/0V
29	VIDSCL+5V	+5V/0V
30	VIDSDA+5V	+5V/0V

PJ802 (MAIN) ⟷ PJ1 (VIDEO/AUDIO)

1	VSEN	+5V
2	SSEN	0V
3	COVER	0V
4	GND	0V
5	GND	0V
6	SYNC SEP V	0/3.3V (component)
7	GND	0V
8	SYNC SEP H	0/3.3V (component)
9	GND	0V
10	Y SYNC	1Vp-p (component)
11	GND	0V
12	3D CROMA	1Vp-p (NTSC)
13	GND	0V
14	3D LUMINANCE	1Vp-p (NTSC)
15	GND	0V
16	C IN	1Vp-p
17	GND	0V
18	Y IN	1Vp-p
19	GND	0V
20	CVBSIN	1Vp-p

PJ851,PJ901,PJ951 (DRIVE) ⟷ LCD PANEL

1	VSSY	0V
2	NDIRY	0 /+15.5V
3	DIRY	0 /+15.5V
4	DY	0 to +15.5V (Pulse)
5	NRG	0 to +15.5V (Pulse)
6	N.C	
7	LCCOM	+6V
8	VID12	+2V to +12V
9	VID10	+2V to +12V
10	VID8	+2V to +12V
11	VID6	+2V to +12V
12	VID4	+2V to +12V
13	VID2	+2V to +12V
14	VSSX	0V
15	ENB1	0 to +15.5V (Pulse)
16	ENB2	0 to +15.5V (Pulse)
17	DIRX	0 /+15.5V
18	NDIRX	0 /+15.5V
19	VDDX	15.5V
20	DX	0 to +15.5V (Pulse)
21	CLX	0 to +15.5V (Pulse)
22	NCLX	0 to +15.5V (Pulse)
23	VSSX	0V
24	VID1	+2V to +12V
25	VID3	+2V to +12V
26	VID5	+2V to +12V
27	VID7	+2V to +12V
28	VID9	+2V to +12V
29	VID11	+2V to +12V
30	LCCOM	+6V
31	NRS1	2 to +6V (Pulse)
32	NRS2	2 to +6V (Pulse)
33	VDDY	15.5V
34	CLY	0 to +15.5V(Pulse)
35	NCLY	0 to +15.5V(Pulse)
36	DY	0 to +15.5V (Pulse)

PJ351 (RELAY) ⟷ ARM SWITCH

1	CAM ARM	5V
2	GND	0V

PJ352 (RALAY) ⟷ PJ360 (LED)

1	+15V_1	+15V
2	GND	0V
3	GND	0V

PJ353 (RALAY) ⟷ P101 (CAMERA UNIT)

1	+15V_2	+15V
2	GND	0V
3	+4V	+4V
4	GND	0V
5	-8V	-8V
6	CAM RX	+/- 7V (data)
7	CAM TX	+/- 7V (data)
8	GND	0V
9	CAM RESET	5V
10	N.C.	0V

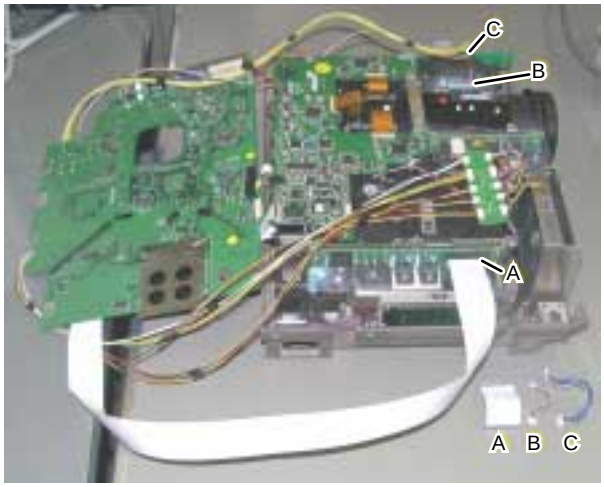
PJ2 (VIDEO/AUDIO) ⟷ SPEAKER

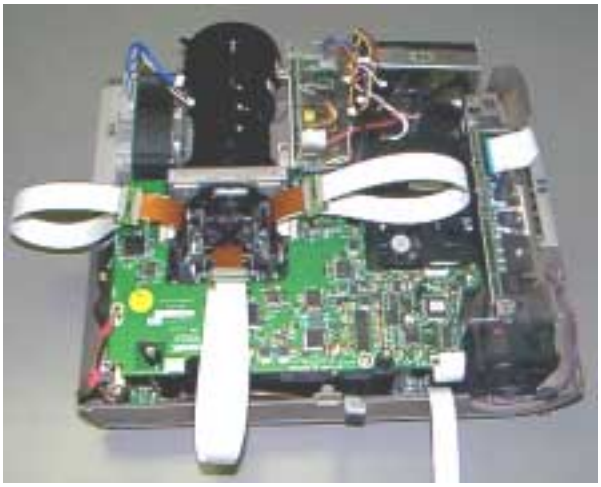
1	AUDIO(+)	1V
2	N.C.	0V
3	AUDIO GND	0V

6. SERVICE JIGS

6-1. Extension cable kit

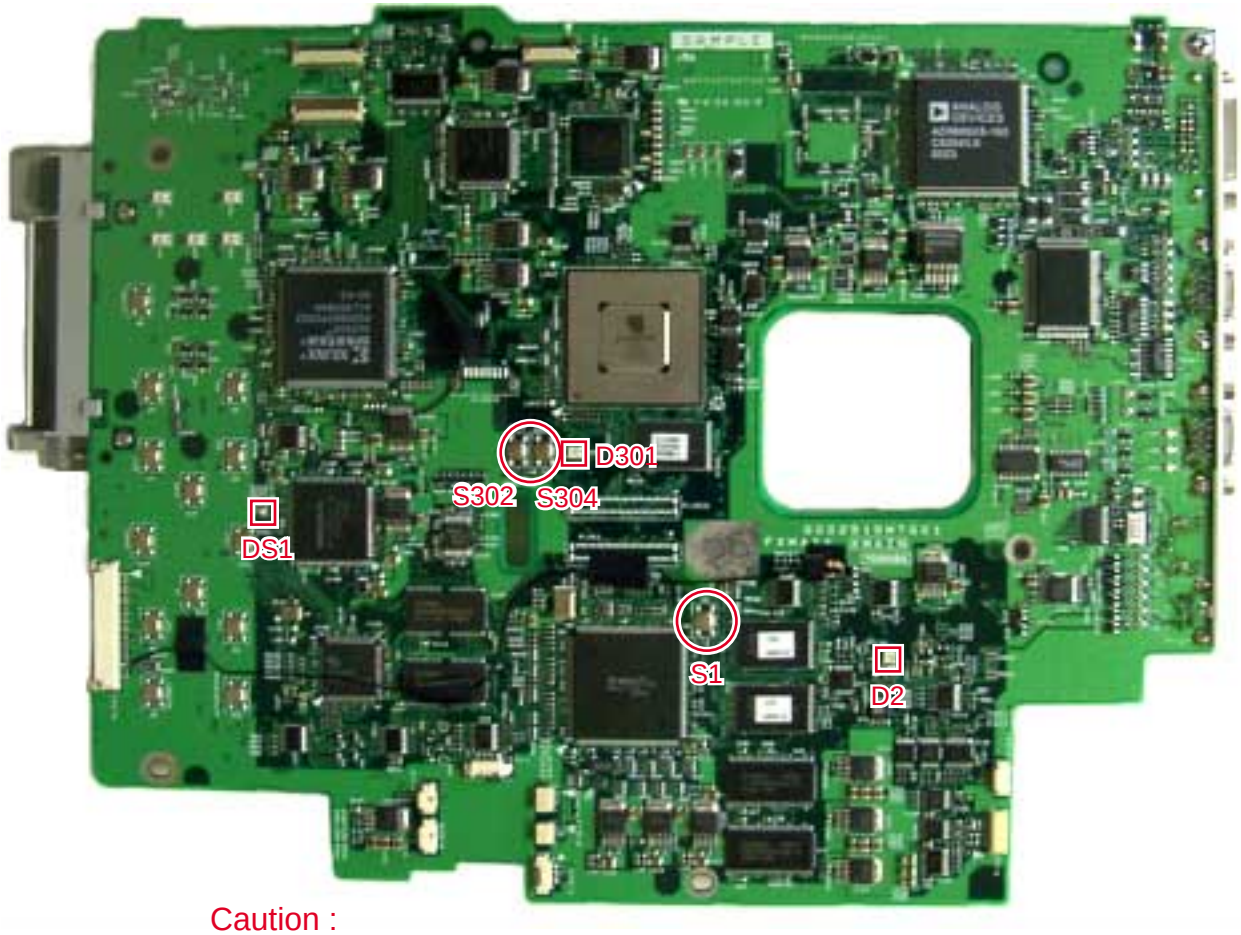
	Type	Pich(mm)	Location	Shape
1	28p flat	1.0	PJ701↔Power Unit	
2	30p flat	0.5	PJ801↔PJ5	
3	20p flat	0.5	PJ802↔PJ1	
4	5p	1.25	PJ11↔Lamp Driver	
5	2p	1.25	PJ12↔Thermal SW	
6	4p	1.0	PJ502↔PBS Fan	
7	3p	1.0	PJ503↔Engine Fan	
8	4p	1.25	PJ504↔Exhaust Fan	
9	3p	1.25	PJ501↔Intake Fan	
10	9p	1.0	PJ29↔PJ201	
11	36p	0.5	PJ851↔LCD-R PJ901↔LCD-G PJ951↔LCD-B	





7. EXPLANATION OF MAIN / DRIVE PC BOARD

7-1. Main PCB



Caution :

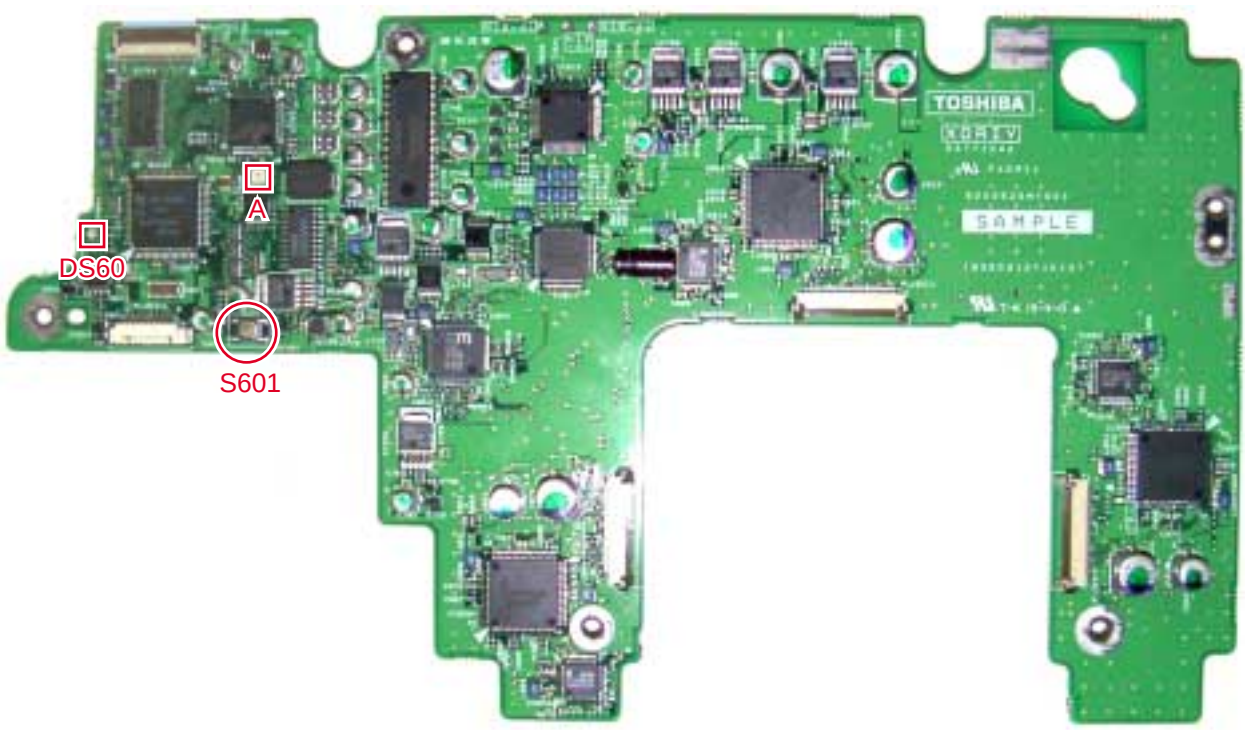
Please do not touch these switches by any means at the time of service

○ : Button Switch □ : LED

Explanation of each part article of operation

Parts Name	Explanation of operation	LED Display		
		Standby	Operation	Abnormal
S1	Reset switch for IC101			
D2	Check for IC101 operation			IC101 failure
S302	Reset switch for IC301			
S304	Reset switch for IC301			
D301	Check for IC301 operation			IC301 failure
DS1	Check for IC41 operation			IC41 failure

7-2. Drive PCB



Caution :

Please do not touch these switches by any means at the time of service

○ : Button Switch □ : LED

Explanation of each part article of operation

Parts Name	Explanation of operation	LED Display		
		Standby	Operation	Abnormal
S601	Reset switch for IC603			
DS601	Check for +5V power-supply			+5V failure
A	Check for IC603 operation			IC301 failure

SECTION 3
PARTS LIST

SAFETY PRECAUTION

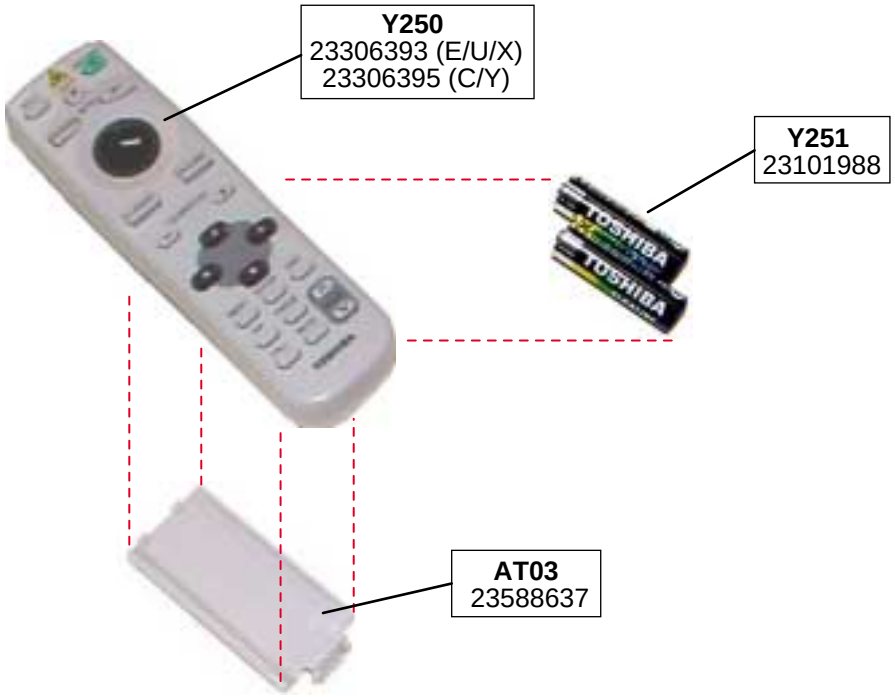
Replace only with part number specified. The mounting position of replacement is to be identical with originals. The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

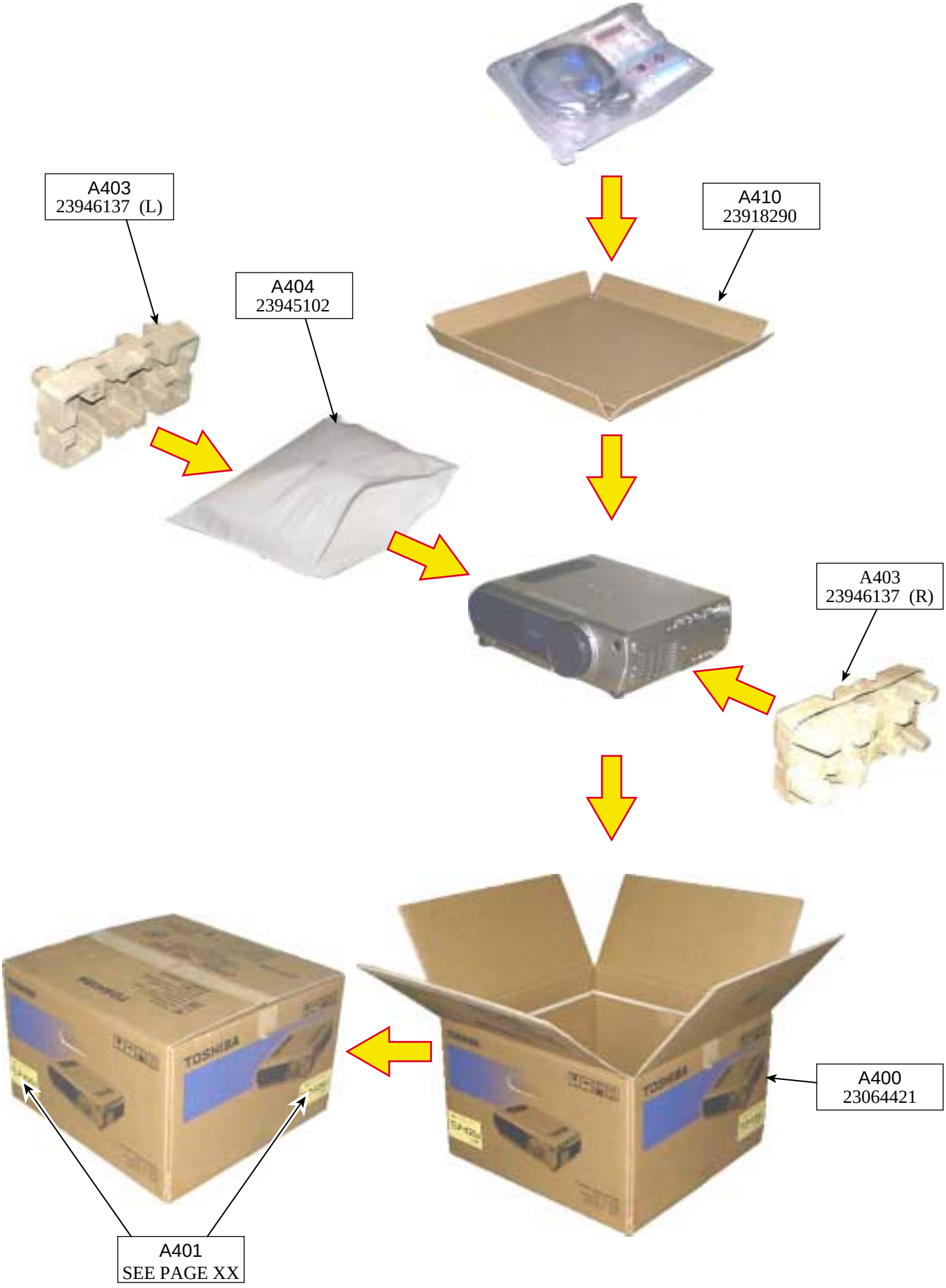
The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

1. EXPLODED VIEWS

1-1. Remote Control Unit



1-2. Packing Assembly

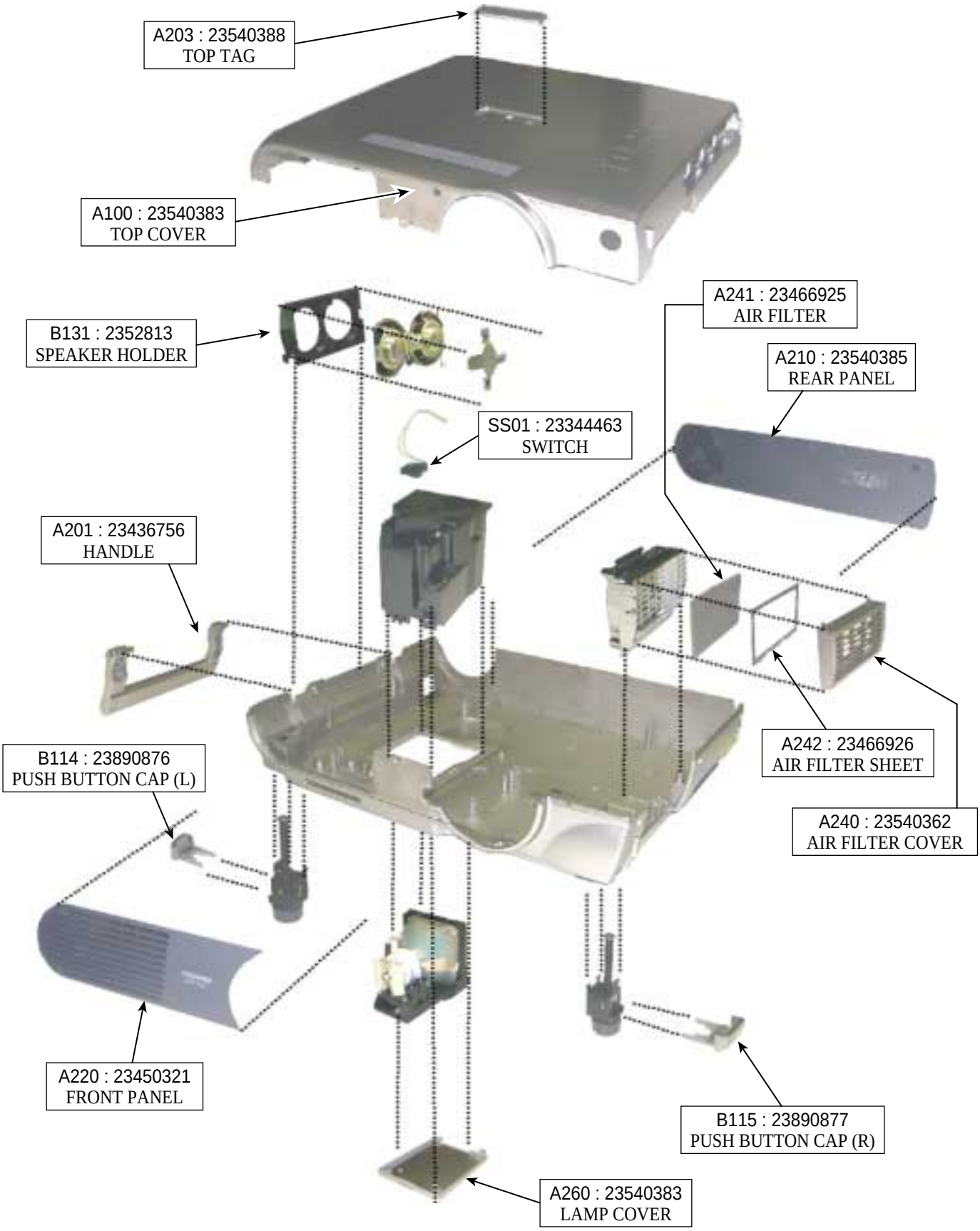


1-3. Accessories

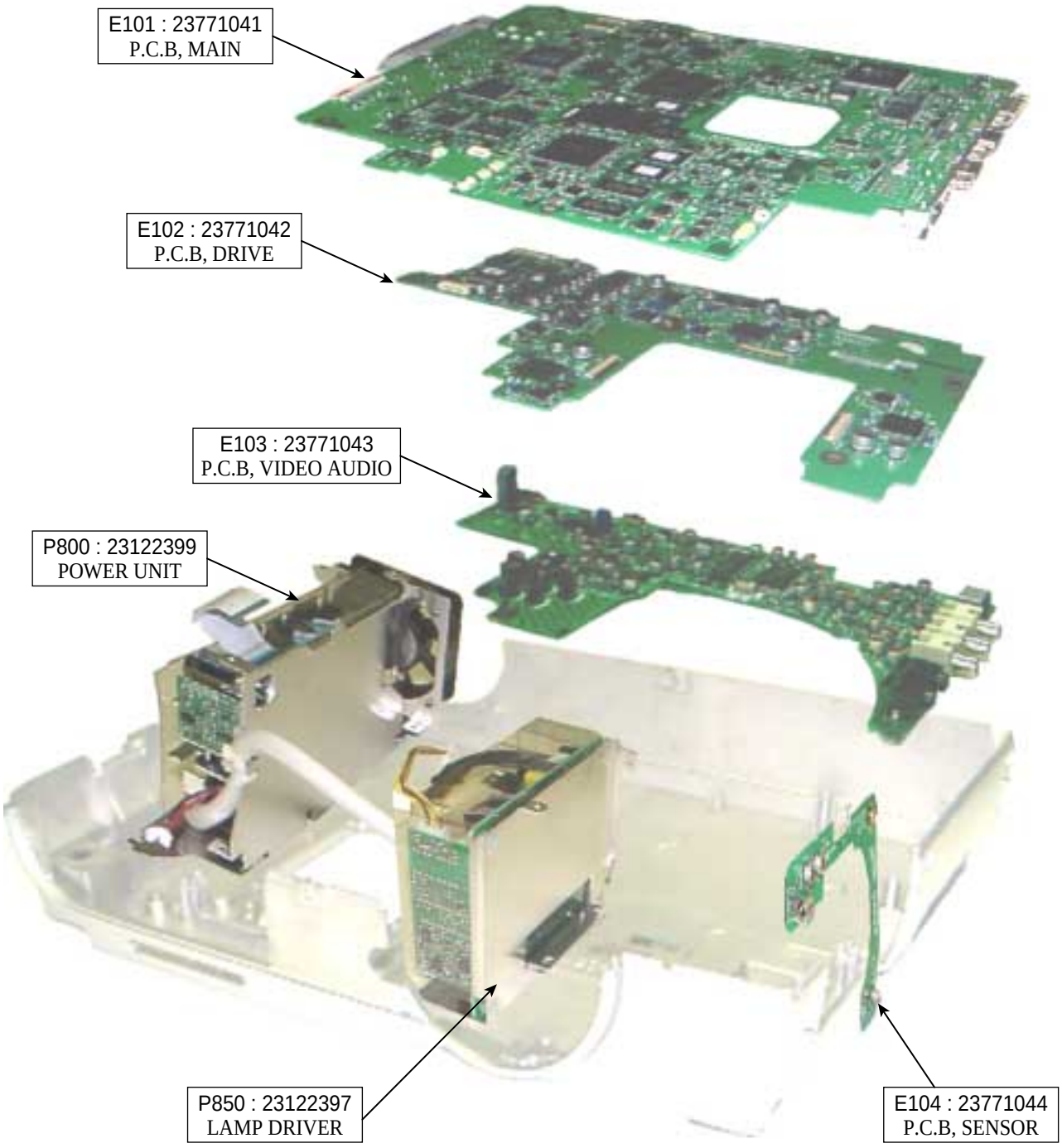
PARTS NO	SN	FORM
Y102	23368750 RGB cable	
Y104	23368731 USB cable	
Y105	23368733 Audio cable for Computer	
Y106	23368676A Control cable (RS-232C)	
Y110	23368679 Adapter for Macintosh computer	
Y240	23368732 AV cable	
Y256	23372149 Power cord (E/Y)	
Y260	23372154 Power cord (U)	

PARTS NO	SN	FORM
Y250	23306393	
Y250	23306395(Y/C)	
Y251	23101988	
Y200	23552948	
Y201 Y201 Y201 Y201 Y215 Y216	23552949 23565184 23565186 23565187 23565185 23565183	U-EF E-EG CHT KOR E-F/SP U-SPA
Y207 Y208 Y209 Y210 Y210 Y210 Y211 Y211 Y212	23589193 23589194 23589195 23589179 23589196 23589198 23589180 23589197 23589181	GER ITA POR ENG CHT KOR FRA CHS SPA
Y260	23372145 Power cord (E/Y/X)	
Y260	23372155 Power cord (C)	

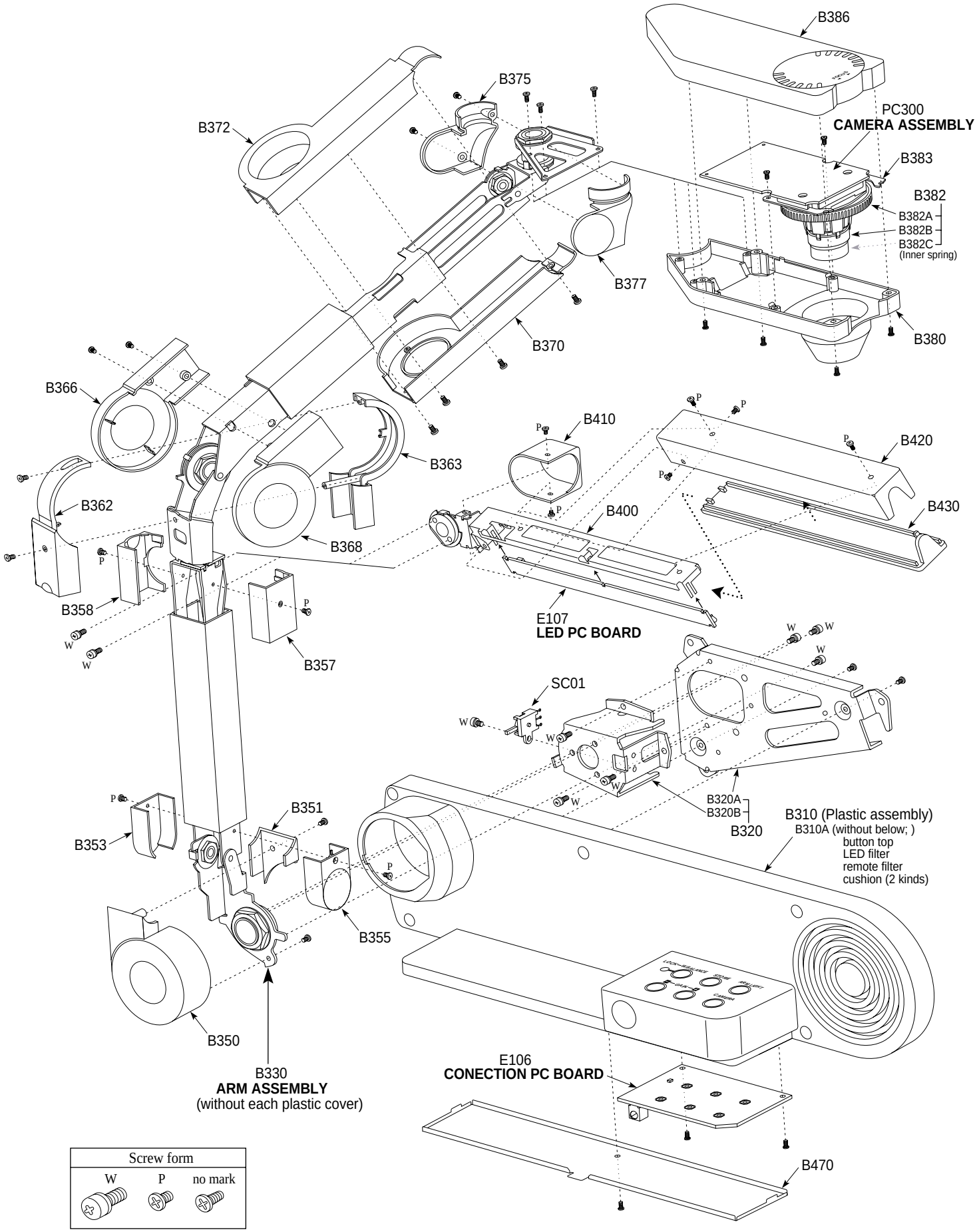
1-4. Chassis Assembly



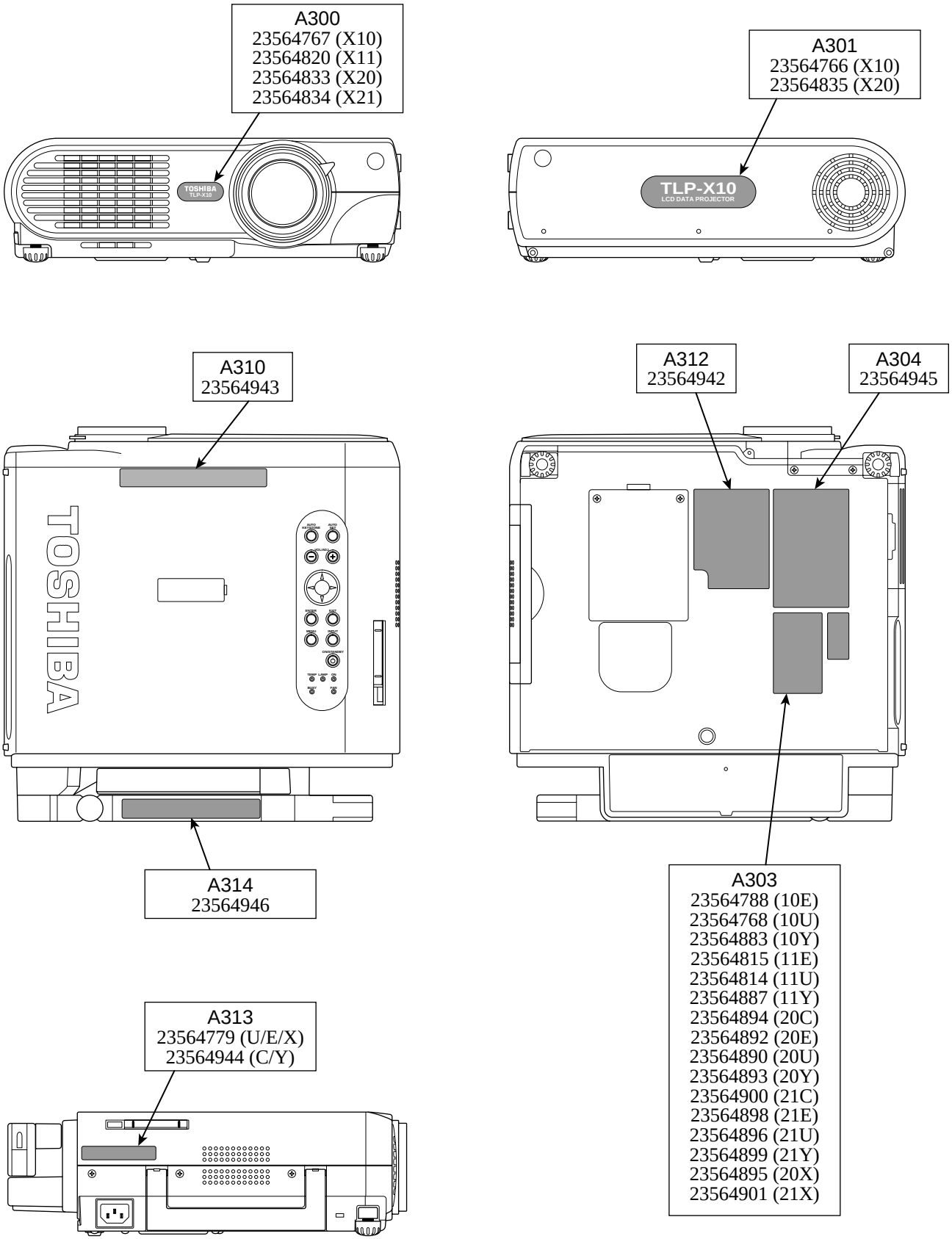
1-5. PC Board and Power Unit Assembly



1-6. Document Camera Assembly



1-7. Labels


A300
23564767 (X10)
23564820 (X11)
23564833 (X20)
23564834 (X21)
A301
23564766 (X10)
23564835 (X20)
TLP-X10
LCD DATA PROJECTOR
A310
23564943
TOSHIBA
A312
23564942
A304
23564945
A314
23564946
A303
23564788 (10E)
23564768 (10U)
23564883 (10Y)
23564815 (11E)
23564814 (11U)
23564887 (11Y)
23564894 (20C)
23564892 (20E)
23564890 (20U)
23564893 (20Y)
23564900 (21C)
23564898 (21E)
23564896 (21U)
23564899 (21Y)
23564895 (20X)
23564901 (21X)
A313
23564779 (U/E/X)
23564944 (C/Y)

2. PARTS LIST

LOCATION NUMBER	PARTS NUMBER	DESCRIPTION
		- MECHANICAL PARTS -
A100	23540383	TOP COVER
A201	23436756	HANDLE
A203	23540388	TOP TAG
A210	23540385	REAR PANEL
A220	23450321	FRONT PANEL
A240	23540362	AIR FILTER COVER
A241	23466925	AIR FILTER
A242	23466926	AIR FILTER SHEET
A260	23540386	LAMP COVER
A270	23540416	LENS CAP
A290	23540474	CONNECTOR COVER
A300	23564767	FRONT TAG (X10)
A300	23564820	FRONT TAG (X11)
A300	23564833	RFONT TAG (X20)
A300	23564834	FRONT TAG (X21)
A301	23564766	REAR TAG(X10)
A301	23564835	REAR TAG(X20)
A303	23564788	RATING LABEL (10E)
A303	23564768	RATING LABEL (10U)
A303	23564883	RATING LABEL (10Y)
A303	23564815	RATING LABEL (11E)
A303	23564814	RATING LABEL (11U)
A303	23564887	RATING LABEL (11Y)
A303	23564894	RATING LABEL (20C)
A303	23564892	RATING LABEL (20E)
A303	23564890	RATING LABEL (20U)
A303	23564893	RATING LABEL (20Y)
A303	23564900	RATING LABEL (21C)
A303	23564898	RATING LABEL (21E)
A303	23564896	RATING LABEL (21U)
A303	23564899	RATING LABEL (21Y)
A303	23564895	RATING LABEL (20X)
A303	23564901	RATING LABEL (21X)
A304	23564945	CAUTION LABEL (BOTTOM)
A310	23564943	CAUTION LABEL (TOP)
A312	23564942	CAUTION LABEL (LAMP)
A313	23564779	CAUTION LABEL (AC CORD)
A313	23564944	CAUTION LABEL (AC CORD) for C
A314	23564946	CAUTION LABEL (ARM)
A315	23564947	CAUTION LABEL (LED)
A320	23564903	VIDEO TERMINAL COVER for C
A400	23064421	CARTON BOX
A401	23564785	CARTON BOX LABEL (10E)
A401	23564769	CARTON BOX LABEL (10U)
A401	23564873	CARTON BOX LABEL (10Y)
A401	23564818	CARTON BOX LABEL (11E)
A401	23564817	CARTON BOX LABEL (11E)
A401	23564874	CARTON BOX LABEL (11Y)
A401	23564879	CARTON BOX LABEL (20C)
A401	23564870	CARTON BOX LABEL (20E)
A401	23564869	CARTON BOX LABEL (20U)
A401	23564875	CARTON BOX LABEL (20Y)
A401	23564880	CARTON BOX LABEL (21C)
A401	23564872	CARTON BOX LABEL (21E)
A401	23564871	CARTON BOX LABEL (21U)
A401	23564876	CARTON BOX LABEL (21Y)
A401	23564881	CARTON BOX LABEL (20X)
A401	23564882	CARTON BOX LABEL (21X)
A403	23946137	PACKING
A404	23945102	COVER
A410	23918290	PARTITION
AT03	23588637	BATTERY COVER

LOCATION NUMBER	PARTS NUMBER	DESCRIPTION
B100	23411494	BOTTOM CHASSIS
B105	23540389	BOTTOM PIECE
B110	23436758	FOOT ADJUST ASSEMBLY
B114	23890876	PUSH BUTTON CAP (L)
B115	23890877	PUSH BUTTON CAP (R)
B131	23528134	SPEAKERE HOLDER
B230	23528138	PC CARD HOLDER ASSEMBLY
B310	23540432	DOCUMENT CAMERA ASSEMBLY
B310A	23540423	PROTECTION BAG
B320	23890882	ASSEMBLY BASE
B320A	23890880	ARM BASE
B320B	23890881	1ST JOINT BASE
B330	23890883	ARM ASSEMBLY
B350	23540426	1ST JOINT M
B351	23540427	1ST JOINT S
B353	23540428	JOINT A
B355	23540429	JOINT B
B357	23549564	2ND JOINT A
B358	23549565	2ND JOINT B
B362	23549522	3RD JOINT 1A
B363	23549523	3RD JOINT 1B
B366	23549524	3RD JOINT 2A
B368	23549525	3RD JOINT 2B
B370	23549520	4TH JOINT A
B372	23549521	4TH JOINT B
B375	23549518	5TH JOINT A
B377	23129519	5TH JOINT B
B380	23549517	CAMERA BOTTOM COVER
B382	23540444	FOCUS RING ASSEMBLY
B382A	23540391	FOCUS RING
B382B	23540392	LENS HOOD
B382C	23836561	SPRING
B383	23890872	CAMERA BASE
B386	23540505	CAMERA TOP COVER
B400	23890837	LED CRUTCH BASE
B410	23549575	LED JOINT
B420	23549576	LED BACK
B430	23549577	LED CLEAR
B470	23936033	PLATE

LOCATION NUMBER	PARTS NUMBER	DESCRIPTION
E101	23771041	MAIN PC BOARD
E102	23771042	DRIVE PC BOARD
E103	23771043	VIDEO AUDIO PC BOARD
E104	23771044	SENSOR UNIT
E106	23771045	CONECTION PC BOARD
E107	23771046	LED PC BOARD
P800	23122399	POWER UNIT(APS-M317)
P850	23122397	LAMP DRIVER(PHG201G7)
PC300	23771048	CAMERA ASSEMBLY
SS01	23344463	SWITCH(OHD3-130M)
		- ACCESSORY PARTS -
Y200	23552948	OWNER'S MANUAL (CD-ROM)
Y201	23565184	OWNER'S MANUAL (ENG/GER) for E
Y201	23552949	OWNER'S MANUAL (ENG/FRA) for U
Y201	23565186	OWNER'S MANUAL (CHT) for C
Y201	23565187	OWNER'S MANUAL (KOR) for X
Y207	23589193	QUICK SHEET (GER) for E
Y208	23589194	QUICK SHEET (ITA) for E
Y209	23589195	QUICK SHEET (POR) for E
Y210	23589179	QUICK SHEET (ENG) for E
Y210	23589196	QUICK SHEET (CHT) for C
Y210	23589198	OWNER'S MANUAL (KOR) for X
Y211	23589180	QUICK SHEET (FRN) for E
Y211	23589197	QUICK SHEET (CHS) for C
Y212	23589181	QUICK SHEET (SPA) for E
Y215	23565185	OWNER'S MANUAL (ENG/SPA) for Y
Y216	23565183	OWNER'S MANUAL (SPA)
Y250	23306393	REMOTE CONTROL UNIT(CT-90057) for E/U/X
Y250	23306395	REMOTE CONTROL UNIT(CT-90066) for Y/C
Y260	23372154	POWER CORD (UL)
Y260	23372155	POWER CORD (GB250V10A)
Y280	23564821	COMMENT LABEL
Z100	23125888	FAN (TYF106J11)
Z101	23125889	FAN (D09T-12P)
		- OPTICAL PARTS -
E201	23430891	OPTICAL ENGINE (CJ371TA) for X10
E201	23430901	OPTICAL ENGINE (CJ374TA) for X20
E201A	23430892	MAIN FRAME
E201B	23430893	PROJECTION LENS
E201C	23430894	SUB FRAME
E201D	23430895	POLARIZER (R)
E201E	23430896	POLARIZER (G)
E201F	23430897	POLARIZER (B)
E201G	23430898	PBS PLATE
E201H	23588634	PBS FAN
E201I	23588635	LAMP FAN
E210G	23301384	LCD PANEL (P13XG210G or L3P13X-21G00G *) for X10
E210G	23301390	LCD PANEL (P13XG250G or L3P13X-25G00G *) for X20

* These type number is to be changed halfway of mass production.

NOTES

(MODEL)

- X20 : TLPX20/21 SERIES
- X10 : TLPX10/11 SERIES
- 20X : TXPX20
- 21X : TXPX21

(LANGUAGE)

- ENG : English
- FRE : French
- GER : German
- ITA : Italian
- SPA : Spanish
- POR : Portuguese
- CHS : Chinese (Simplified)
- CHT : Chinese (Traditional)
- KOR : Korean

SPECIFICATIONS

Main Unit

	TLP-X10 / TLPX20	TLP-X11 / TLPX21
Power requirements	AC 100-240V 50/60Hz	
Power consumption	320W (standby:18W)	330W (standby:18W)
Mass	5.3kg	6.2kg
Dimensions	W345mmxH104mmxD281mm	W345mmxH104mmxD336mm
Ambient environment	Temperature:0 to 35 cent degree Humidity:30% to 70% HR	
Lamp	210W High pressure Hg lamp	
Speaker	2W (monaural)	
RGB INPUT	RGB signal :(D-sub 15pin)	
VIDEO INPUT	S-Video signal : Mini DIN-4pin Video signal : 1V(p-p), 75 ohm	
CONTROL terminal	Mini DIN-8pin(RS-232C)	
Cabinet Material	ABS	
Document camera		1/2 inches CCD 1,447,680 pixels (1392x1040 dots) Lens : F=3.1 f=6.4mm

LCD

Projection system	3-panel transmission
Panel size	1.3 inches
Driving system	TFT active matrix
Picture elements	786,432 pixels (1024x768dits)

Projection Lens

Lens	Zooming lens F=2.2-2.5 f=47-61mm
Focusing	Manual operation
Zooming	Manual operation

Accessories

Owner's manual	1
Owner's manual (CD-ROM)	1
Wireless remote control	1
Battery	2
Power cord	1
RGB cable	1 (3m)
Adapter for Macintosh computer	1
AV cable	1 (3m)
Audio cable for computer	1 (3m)
Control cable	1 (1.8m)
USB cable	1 (2m)

The design and specification are subject to change without notice.

Trademarks

Macintoh is a registered trademark of Apple computer, Inc.

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